









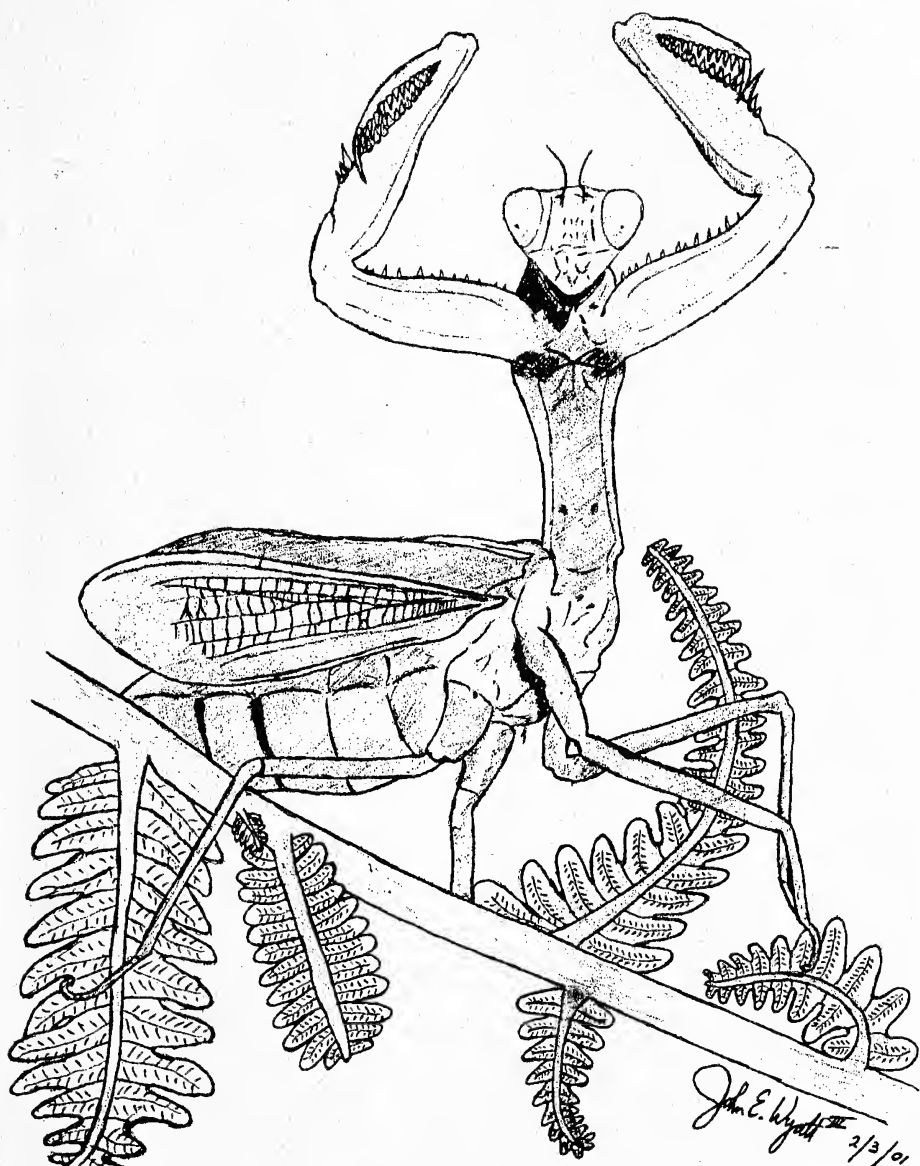






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# ANIMAL KEEPERS' FORUM



The Journal of the American  
Association of Zoo Keepers, Inc.  
**JULY 2002**

**Managing Editor:** Susan D. Chan • **Associate Editors:** Gretchen Ziegler, Sequoia Park Zoo & Kayla Grams, Lovell, WY • **Enrichment Options Coordinators:** Kayla Grams, Lovell, WY & Jan Roletto, Columbus Zoo • **Legislative Outlook Column Coordinator:** Georgann B. Johnston, Sacramento, CA. • **ABC's Column Coordinator:** Diana Guerrero, Big Bear Lake, CA • **Reactions Column Coordinator:** William K. Baker, Jr., Little Rock Zoo • **The Water Column Coordinators:** Dan Conklin and Kevin Shelton, The Florida Aquarium and Bruce Elkins, Indianapolis Zoo

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Biological Values for Selected Mammals, 3rd Edition - Jan Reed-Smith, John Ball Zoo

AAZK Enrichment Notebook - Lee Houts, Folsom City Zoo



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## About the Cover.....

This month's cover features a Carolina Mantid (*Stagmomantis carolina*), a voracious insect that can measure nearly 2 1/2 inches in length. It was drawn by John E. Wyatt III, a Keeper I at the Montgomery Zoo, Montgomery, AL. This pale green to brownish gray insect is usually found in and around gardens and meadows on low shrubs and flowers. They range from Virginia to Florida, west to Mexico and California, and northeast to Indiana. Females lay 30-80 elongated eggs in parallel rows and coat them with a tan, frothy material which forms a hard casing. The eggs overwinter and nymphs emerge in the spring, eating almost immediately after hatching. Diet consists mainly of other insects. Females will often eat the males after mating with them. Thanks, John!

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Authors are encouraged to submit their manuscripts on a disk as well as in hard copy form. Manuscripts submitted either on disk or electronically as attachments to an email should be submitted in Microsoft WORD. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5"** (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy black and white **or** color prints (minimum size 3" x 5" [8cm x 14cm] ) are accepted. Clearly marked captions should accompany photos. Please list photo credit on back of photo. Photographs may be submitted electronically as either JPEG or TIFF file attachments.

Articles sent to Animal Keepers' Forum will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for AKF. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone, fax or email contributions of late-breaking news or last-minute insertions are accepted as space allows. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (785) 273-1980; email is akfeditor@zk.kscoxmail.com<

**Deadline for each regular issue is the 10th of the preceding month.**

**Dedicated issues may have separate deadline dates and will be noted by the editor.**

Articles printed do not necessarily reflect the opinions of the AKF staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

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E-Mail Addresses: You may reach Barbara Manspeaker at AAZK Administrative Offices at: aazkoffice@zk.kscoxmail.com< You may reach Susan Chan and *Animal Keepers' Forum* at: akfeditor@zk.kscoxmail.com<

**AAZK Website Address: [www.aazk.org](http://www.aazk.org)**

**BFR Website: <http://bfr.aazk.org>**

# ***Scoops & Scuttlebutt***



## **Please Note New Email Addresses for AAZK Administrative Office/AKF**

Members are asked to note that there are new email addresses for both the AAZK Administrative Offices and for *Animal Keepers' Forum*. These changes became necessary when our cable service switched from Roadrunner to their own network.

The address for Barbara Manspeaker at AAZK Administrative Offices is:  
aazkoffice@zk.kscoxmail.com

The address for Susan Chan and *Animal Keepers' Forum* is:  
akfeditor@zk.kscoxmail.com

Please begin using these new addresses immediately.

## **Chapter Shows Support for Junior Keepers' Journal**

The Indianapolis Chapter of AAZK has sent in a very generous donation of \$450.00 to help support the publication of the *Junior Keepers' Journal*. The AAZK Board of Directors, the AAZK Administrative Office staff and *JKJ* Editor Mark de Denus wish to express their appreciation to the members of the Indianapolis Chapter for their support of this project. The *Junior Keepers' Journal* is published six times a year and is a benefit for youngsters from 8-12 years old who are members of AAZK's Junior Keeper Program. The *JKJ* Editor welcomes contributions from keepers for publication in the journal (see article pg. 197 in the May 2002 issue of *AKF* for details). Or for further information on *JKJ*, you may contact the editor at: Mark de Denus, Editor *AKJ*, Reid Park Zoo, 1100 S. Randolph Way, Tucson, AZ 85716; email is ginty@theriver.com<

## **Milwaukee Chapter Supports CPR Granting Program**

The Milwaukee Chapter of AAZK has donated \$600.00 to the Association to be utilized in funding the Conservation, Preservation and Restoration Granting Program. This \$1,000 annual grant is designed to encourage and support efforts in conservation conducted by keepers and aquarists in zoological parks and aquariums around the world. Members of AAZK, Inc. in good standing are eligible to apply and receive this grant. In sending the donation, Milwaukee Chapter Treasurer Lisa Guglielmi noted "We all believe that this grant is important for a lot of reasons. We have a few keepers who are involved in conservation projects who are funded, but we realize that they are the exception. We are happy to help someone else out in their projects."

## **Nutrition Advisory Group Announces Website and Proceedings Sales**

The Nutrition Advisory Group is happy to announce the new NAG website. It is located at <http://www.NAGonline.net> (note the .net extension). Currently, the site contains information about the NAG, husbandry manual nutrition chapters, the published NAG technical papers and other nutrition resources. We hope that you will find the site a valuable resource.

We are also pleased to announce that the NAG proceedings from 1999 and 2001 conferences are now available for purchase. The ordering information is on the web site ([www.nagonline.net](http://www.nagonline.net) under "nag conference"). There is a form that can be printed out and mailed with your payment to Mike Maslanka (address on the form). The cost is \$30 per copy plus \$4 per copy shipping in the US. There is also a table of shipping costs to many other countries. If you are ordering multiple copies of the same proceedings to the same address, we may be able to offer a reduction on shipping. E-mail the address shown on the web site for more information.

The proceedings from the 1995 and 1997 conferences are out of print and cannot be ordered. We hope to make these available on the web site sometime this autumn/late this year. --submitted by Wendy Graffam, Ph.D., NAG web site facilitator.

### **Enrichment Online Website Announced**

The Fort Worth Zoo, in conjunction with the American Institute of Biological Sciences, is proud to announce that the Enrichment Online website is now active and available to animal managers worldwide. The key component of the site is a search engine for taxa-specific enrichment ideas. In addition to accommodating detailed searches for enrichment items, the database is interactive and allows users to input their own ideas and provide comments on items already in the database. We have already received registrations from France, Australia, Kuwait and Venezuela.

Supplemental materials on the site include hot links to other enrichment-related web sites, a list of periodicals and published materials, and a detailed Help section. We hope users will find this a comprehensive and valuable resource for integrating enrichment into the management of captive animals in both zoos and laboratories.

Log on today and share your enrichment ideas with colleagues from around the world at [www.enrichmentonline.org](http://www.enrichmentonline.org)

### **Great Ape Enrichment Manual Available**

The Jane Goodall Institute and the European Association of Zoos and Aquariums (EAZA) have jointly published a softcover manual on Great Ape Enrichment which incorporates enrichment ideas from zoos across Europe. It is available in English, Spanish and French. The cost is eight Euros plus postage. For further information you may contact Carsten Knott from the Frankfurt Zoo at [carsten.knott@t-online.de](mailto:carsten.knott@t-online.de)

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## **Proposed By-Laws Changes Notification**

During the year 2001-2002, the Board of Directors and the By-Laws Committee reviewed the National by-laws to determine if there were any changes that needed to be made and voted on. These are the areas found that needed changes. Please review and be prepared to vote on these changes during the General Meeting at the National AAZK Conference in Kansas City, MO from 6-10 October 2002.

Article I (Offices), Section 1 (Principle Office), sentence 1, currently states "The Principle Office for the transaction of business of the Association is hereby located at 635 S.W. Gage Blvd., Topeka, KS 66606-2066." The sentence should now state: "The Principle Office for the transaction of business of the Association is hereby located at 3601 S.W. 29th St., Suite 133, Topeka, KS 66614-2054."

Article II (Officers and Board of Directors), Section 1 (Board of Directors), sentences 3 and 4, currently states "The Immediate Past President shall serve as *ex-officio* member of the Board without the right to vote and shall serve as the Secretary to the Board of Directors. The President of the Association shall be elected by Executive Committee appointed by the Board of Directors in a policy detailed in the Operations Manual of the Association." Those sentences shall now read: "The Immediate Past President shall serve as *ex-officio* member of the Board without the right to vote. The President and Vice President of the Association shall be elected by Executive Committee appointed by the Board of Directors in a policy detailed in the Operations Manual of the Association."

Article VI (Committees, Coordinators, and Advisors), Section 2 (Standing Committees), sub-section "Ethics", sentence 2, currently states "Appointments to the Committee shall occur every two(2) years and are made by the Board of Directors." That sentence should now read: "Appointments to the Committee are made by the Board of Directors."

--Submitted by Gisela Wiggins, By-Laws Committee Chair  
The North Carolina Zoo, Asheboro, NC



# Coming Events

**Fourteenth International Conference on Bear Research and Management** - 28 July - 3 August 2002 - Dampsaga Kulturhus, Steinkjer, Norway. For further information contact: Ole Jacob Sorensen, e-mail: ole.j.sorensen@hint.no< OR Tor Kvam e-mail: tor.kvam@hint.no<

**Association of Avian Veterinarians 23rd Annual Conference & Expo** - 26-30 August 2002 in Monterey, CA. Will include special behavior program, paper sessions and hands-on labs. To view the entire program and register on the web, visit [www.ConferenceOffice.com/AAV](http://www.ConferenceOffice.com/AAV). To contact the AAV Conference Office: email [AAV@ConferenceOffice.com](mailto:AAV@ConferenceOffice.com); phone - (303) 756-8380 ext. 12; fax - (303) 759-8861.

**AFSA (French Speaking Association of Keepers) National Conference** - 7-8 September 2002 at the Mulhouse Zoological and Botanical Park. For further information please contact: Mickael Michault, AFSA Keeper Liaison; email - [mickael.branfere@wanadoo.fr](mailto:mickael.branfere@wanadoo.fr)<

**Elephant Managers Association 2002 Conference** - 29 September to 2 October 2002. Hosted by Cleveland Metroparks Zoo, Cleveland, OH. For more information call (216) 661-6500 ext. 4445 or email [Mkelleysharp@MSN.com](mailto:Mkelleysharp@MSN.com)<

**Association of Zoo Veterinary Technicians 22nd Annual Conference** - 1-6 October 2002 in Milwaukee, WI. Meeting topics include microbiology wetlab, zoo animal dentistry, lab techniques and procedures specific to exotic species, and case studies of traditional zoo and aquatic animals. Will include pre-conference tour to International Crane Foundation. For more information contact: Margaret Michaels of the Milwaukee Zoo at (414) 256-5441; fax (414) 256-2522 or email at [MMICH@cxccpe.com](mailto:MMICH@cxccpe.com) or check out the website at [www.azvt.org/](http://www.azvt.org/)

**American Association of Zoo Veterinarians** - 6-10 October 2002 in Milwaukee, WI. Program sessions include Reptiles and Amphibians, Avian Medicine, Hoofstock, Carnivores, Primates, Case Reports, Aquatic Animals, Pathology, Conservation Medicine, Emerging Diseases, Reproduction and Contraception, Behavior, Enrichment and Conditioning, and Biomaterial Banking. There will also be a poster session, veterinary and graduate student paper competitions, and workshops/wet labs.

For information regarding presentations of papers, please visit our website at [www.aazv.org](http://www.aazv.org) or contact Randy Junge, DVM, St. Louis Zoo, Forest Park, St. Louis, MO 63110; Phone (314) 768-5487; Fax (314) 768-5454; E-mail [rejunge@aol.com](mailto:rejunge@aol.com)<

For additional conference information, please contact Wilbur Amand, VMD, Executive Director/AAZV, 6 North Pennell Rd., Media, PA 19063; Phone (610) 892-4812; Fax (610) 892-4813; E-mail [AAZV@aol.com](mailto:AAZV@aol.com)<


On Friday, 11 October 2002, The American Veterinary Medical Association will hold its annual Animal Welfare Forum, this year titled "Welfare of Zoo Animals" in conjunction with the AAZV meeting. For more information contact Darci Reagan at the AVMA at 1-800-248-2862 ext 211 or [dreagan@avma.org](mailto:dreagan@avma.org)<

**Joint National AAZK/AZH Conference** - 6-10 October 2002 in Kansas City, MO. Conference site is Westin Crown Center. For further information watch for announcements in *AKF* or visit the conference website at [www.aazkazh2002.org](http://www.aazkazh2002.org)<

**The Zoo Registrar Association 2002 Conference** 10-12 Oct 2002 - in Wichita, Kansas, U.S.A. and hosted by Sedgwick County Zoo. Hotel will be the Wichita Marriott Hotel, reservations Number: (800) 610-0673 (available 8:00-5:30 Central time, Mon-Fri.). For more information contact Conference Chairperson Aletha Kinser, Sedgwick County Zoo, [rcgistrar@scz.org](mailto:rcgistrar@scz.org) (316) 942-2213 ext. 203, Program Chair Paul Louderback, Tulsa Zoo and Living Museum, [Plouderback@ci.tulsa.ok.us](mailto:Plouderback@ci.tulsa.ok.us) (918) 669-6225 or visit the ZRA website: <http://www.zra.homestead.com/> This is an excellent chance to meet and network with other zoo registrars. The program will be records, permitting and animal shipping oriented. There should be an ISIS representative present.

**The Ninth North American Crane Workshop** - 21 to 25 January 2003 in Sacramento, CA. Plans for the workshop include an ice-breaker on Tuesday evening, technical sessions on Wednesday and Friday, and an all-day field trip on Thursday, with an awards banquet on Friday evening. For more information contact Tom Hoffmann, NACWG Treasurer, at [Thoffmann@hoffmanns.com](mailto:Thoffmann@hoffmanns.com)<

**First International Conference on Zookeeping in 2003** - The Netherlands - Will be held between 2-10 October at Birdpark Avifauna. For further information please visit: <http://cs.geocities.com/jxarles20><



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## AAZK Announces New Members

Rebecca Keene and Heather McMahon, **Roger Williams Park Zoo (RI)**; Jamie Richau, **Buffalo Zoological Gardens (NY)**; Thomas E. Smith, Daniel Benboe and Mike Frost, **Zoo Atlanta (GA)**; Deborah Warrick, **St. Augustine Wildlife Reserve (FL)**; Diana Raper, **Central Florida Zoological Park (FL)**; Stephanie Jernison-Watkins and Steve Bogle, **Jackson zoo (MS)**; Lee Turner, **Mesker Park Zoo (IN)**; Marrion Linn, **African Wildlife Safari Park (OH)**; Amanda Hanlon, **Akron Zoo (OH)**; Daniel Hemmann, **John Ball Zoo (MI)**; Travis Gooble and Clark Bosch, **Zoo Montana (MT)**; Adrienne Poulsen, **Dickerson Park Zoo (MO)**; Todd Bridgewater, **Oklahoma City Zoo (OK)**; Christa Voss and Michelle Zarantonello, **Tulsa Zoo (OK)**; Erin McNally, **Austin Zoo (TX)**; Kelly Miles, **Denver Zoo (CO)**; Michele Stancer, **San Diego Zoo (CA)**; Becky Anderson, Stacy Brown and Kelly Schaub, **The High Desert Museum (OR)**.

### Renewing Institutional Members

Seneca Park Zoo

Rochester, NY

Lawrence Sorel, Director

Catoctin Wildlife Preserve & Zoo

Thurmont, MD

## The Bronx Zoo's Oldest Elephant Dies

Tuss, matriarch of the zoo's Asian elephant herd at the Bronx Zoo for three decades, died recently after a brief illness. She was about 50 years old.

A team of veterinarians, zoologists and curators fought unsuccessfully to save her when she was stricken by an age-related illness that has yet to be identified.

Tuss had long been a visitors' favorite and was featured on TV programs including PBS's "Sesame Street."

She was born wild in Assam, India, in about 1952 or 1953, and was acquired by the zoo in 1976.

---

## Zoo Atlanta's Female Oldest Gorilla Mom in North America

On Memorial Day, 37-year-old Banga became the oldest gorilla in captivity in North America to give birth.

Banga mated with two gorillas — Ozzie and Carlos, both silverbacks. Carlos died earlier this year and zoo officials are now conducting tests to determine the father of the new infant. Ozzie already has 10 children at Zoo Atlanta. Carlos did not have any.

"She originally had been in Ozzie's quarters where she is now. Then, after Carlos arrived, she moved in with his group and mated with him and then, after Carlos' untimely death, she was placed back in this yard and almost immediately did mate with Ozzie," said Megan Winokur of Zoo Atlanta.

Also in question is the sex of the offspring which is being raised by its mother. It likely will be several months before it is known whether the baby is a male or female.

**NOW  
AVAILABLE!**

**NEOTROPICAL TREEBOAS:**  
Natural History of the  
*Corallus hortulanus* Complex  
by Robert W. Henderson

Treeboas (*Corallus*) occur over much of the neotropical mainland and on a number of islands. They are often conspicuous members of neotropical snake fauna, and are known for their irascible temperaments and, in some species, their highly variable color

patterns. The *Corallus hortulanus* complex of treeboas comprises four species:

- 1) *C. cookii* on St. Vincent
- 2) *C. grenadensis* on the Grenada Bank
- 3) *C. hortulanus* in Amazonia, the Guianas, and Brazil's Atlantic forest
- 4) *C. ruschenbergerii* from southern Central America and northern South America

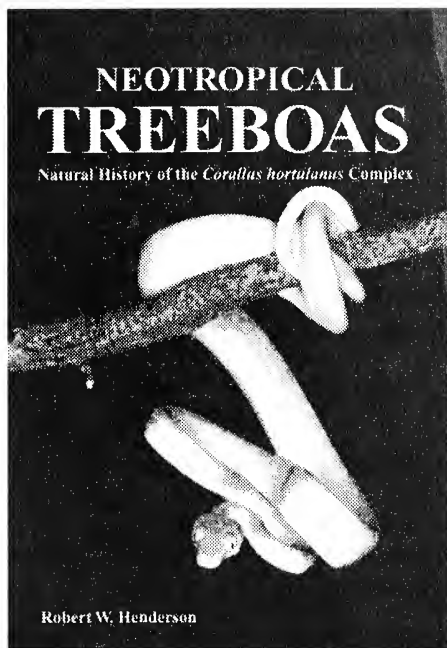
This book summarizes what is currently known about the natural history of each of the four species, with strong emphasis on *C. grenadensis*. Topics covered include color and pattern; habitat and habitat use; activity; food and foraging; predators and defensive behavior; populations; ecological relationships with other biotas; and the connection between treeboas and humans. This hardcover book includes 27 graphs, 24 tables, 9 maps, and 9 black and white photos, plus 32 color photographs.

Orig. Ed. 2002

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# ABC'S

## ABC's: Animal Behavior Concerns and Solutions

*A Question & Answer Forum for Animal Professionals*

©2002 by Diana Guerrero, Independent Behavior Consultant  
Ark Animals of California, Big Bear Lake, CA



### **Question(s)**

*What is your opinion on the issue of private ownership?*

### **Answer**

My opinion regarding private ownership is generally that it is not a good idea. The reason I have this belief is multifaceted. Over the years I have worked with a vast array of facilities both public and private, here in the USA and overseas. I have seen mentally deranged animals, nutritionally damaged creatures and more. There are always good and bad examples to be found in every situation but the layperson with a wild animal tends to be a problem more often than not.

Most of the problems seem to occur in the private sector when the acquisition of wild creatures comes from an emotional or impulse buy. Captive wildlife has complex nutritional, environmental, social and other management needs. As time passes the novelty wears off and the reality sets in.

Unless a facility or individual investigates the natural history of the animal, researches the environmental needs of that species, is able to provide for proper care and management (veterinary specialists, caretakers, mental stimulation, physical activity, social interactions, etc.) for the LIFE of that animal I think it is a bad idea.

In the case of private PET ownership I discourage it. Most people cannot even handle the domestic animals they have. Here are a few of the salient points:

### **Captive wild animals**

- have housing needs beyond what the average pet owner can provide
- have more complex nutritional needs than the average pet owner will provide
- have more intricate medical needs
- are behaviorally not adapted for life within an average pet household

- may require permits and other special management provisions
- have complex social needs beyond what the average household can provide
- require astute socialization and training beyond what the average pet household can provide
- can display predatory, territorial, sexual and possessive aggression far more frequently than the average pet and far more escalated than the public imagines
- can destroy property through natural curiosity, denning, marking and other behaviors
- pose a risk to the reputation and conservation of their species
- can pose a risk to the genetic integrity of their species

About the Columnist: Since 1978 Diana Guerrero has worked professionally with both wild and domestic animals. She has been affiliated with and certified by a variety of animal programs in the USA and Europe. She currently writes, consults and leads safaris. Information and enrollment for her safaris, seminars, training courses and animal career programs can be found at her website: <http://www.arkanimals.com>. Publications and other training support items may also be purchased at the site. Questions for ABC's should be submitted to Diana directly via email: [arkabc@arkanimals.com](mailto:arkabc@arkanimals.com), through the ABC'S questionnaire on her website, or via regular mail: c/o ARKANIMALS.COM, P.O. Box 1989-215, Big Bear Lake, CA 92315 USA.

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## Rare Rabbit Births Provide Hope for Dwindling Population

Three litters of endangered Columbia Basin pygmy rabbits (*Brachylagus idahoensis*) have been born at the Oregon Zoo in Portland and at Washington State University in Pullman.

The litters were born between 1-5 May to adult rabbits removed from the wild, where their numbers have dropped to dangerous lows. As is the case in the wild, the rabbits at the zoo and at WSU gave birth outside entrances to burrows they had built in captivity. After birth the mothers carried the newborns down into their nests. The exact number of babies, each about as long as a human thumb, and the sex of the offspring were undertermined as of this writing.

This species has been given emergency Endangered Species List protection by the federal government.

The Washington Department of Fish and Wildlife and the U.S. Fish and Wildlife Service are working cooperatively on a program to boost the population by breeding the rabbits in captivity and then releasing them back into their native shrub-steppe habitat in Eastern Washington. Northwest Trek Wildlife Park in Pierce County, WA, is breeding pygmy rabbits from Idaho, where the population is more plentiful, for testing release techniques that will be used later in Washington.

David Hays, an endangered-species specialist for the Washington State Department of Fish and Wildlife noted that "These captive births are a crucial step in recovery of this unique population". He said the first release of the rabbits could be next year.

--Excerpted from an Associated Press article published in the Seattle Times 10 May 2002

# Teaching an Elephant to Paint

## A Combination of Training and Enrichment

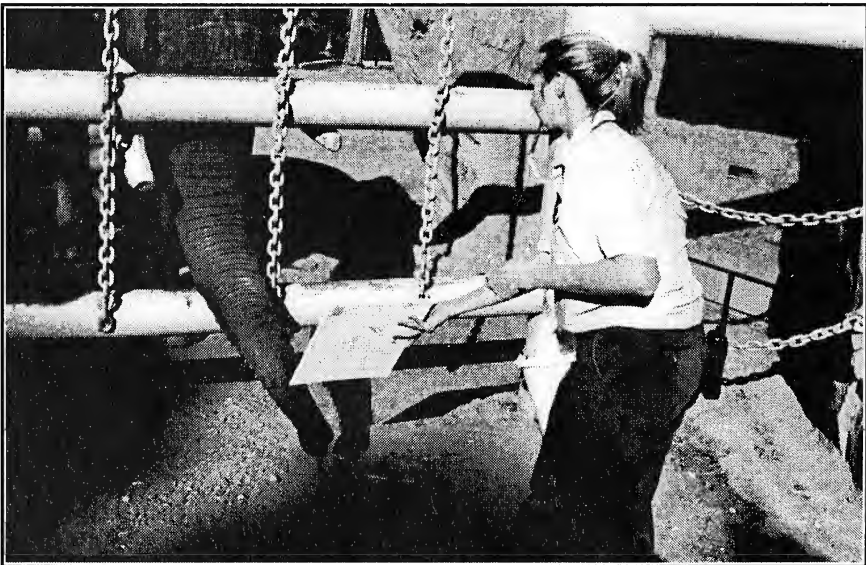
By

Michael W. Skidmore, Animal Keeper  
Lincoln Park Zoo, Chicago, IL

Keeping an animal as intelligent as an elephant enriched in a captive environment is an immense challenge for a zoo keeper. Enrichment items can be large and heavy and can take two or three keepers more than a half-hour to implement. The goal of the elephant team at Lincoln Park Zoo (LPZ) was to supply enrichment that would last the maximum amount of time for our elephants with a minimum amount of time and labor to implement. Teaching our adult, female African elephants (*Loxodonta africana*), Keke and Binti, to paint would meet the enrichment goals and would help enhance training, as finding new behaviors for an elephant to learn is another part of improving their lives. They seemed to enjoy the learning process and the attention they received during training.

Wild elephants have been observed using their trunks to make drawing motions in substrates (Diamond, 1991; Ehmann, 1987), and captive elephants (Keke included) will use rocks or other items found to scratch the floors and walls in their exhibits. Both Siri from the Burnett Zoo (Ehmann, 1987) and Ruby from the Phoenix Zoo (Gilbert, 1990) were given the chance to paint after employees kept noticing designs scratched on the floor of the elephants enclosures and sticks arranged in neat piles. Siri learned to use pencils, paint, brushes and crayons. Some of Siri's work was shown to an art professor, Jerome Witkin, who was not told that the artist was an elephant. He was impressed by the artwork, and commented that the artist was female and interested in Asian calligraphy (Diamond, 1991). Child-art experts at Harvard University were given three sets of drawings by Siri, and they successfully picked the sequence in which they were drawn, showing a developing skill (Ehmann, 1987).

Ruby progressed in her painting to where she decided which colors to use and refused to add to a work once she decided it was done. When keepers gave her a color she didn't request, she would wait until they gave her the right color. Elephants might not be actually seeing colors, but they probably appear as different levels of luminosity in shades of gray (Gilbert, 1990). Of the hundreds of paintings done by Ruby, no two of them are close to being the same (Gilbert).



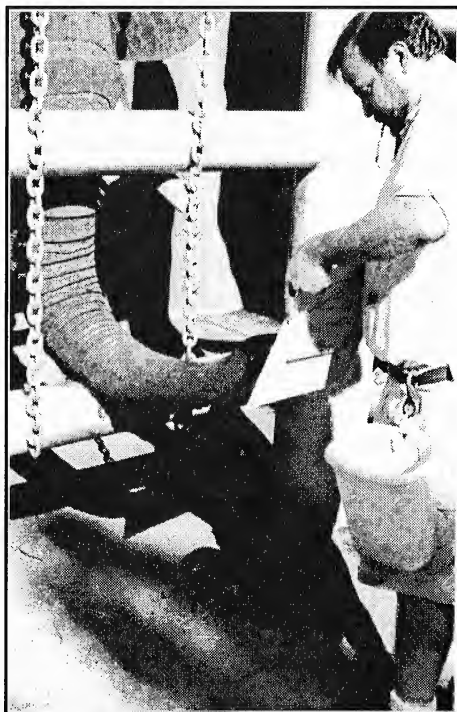
Former LPZ Keeper Emmy Rottinghaus is shown painting with Keke. (Photo by Michael Skidmore)

Binti has been using her trunk to move paint around on a canvas held by a keeper for years. In the past, Binti has also drawn using a charcoal pencil or chalk on a secured canvas (Henley,1992). My assignment was to work with Keke, and I proposed teaching her to paint using a brush.

Our first step was to get permission from the veterinary staff for the project. We used only items they authorized, a wooded-handled horsehair brush and non-toxic paints. First Keke was given a branch the same size as the brush to ensure she would give it back and not ingest it. It was actually hard to get Keke to keep the brush. She has always been great at retrieving items and releasing them to the keepers, a helpful behavior for tools left behind in an exhibit. So whenever we handed her the branch, she would immediately drop it. So the first command was for her to "hold" the branch. That accomplished, we substituted the brush. Next we put a blob of paint on a canvas, which we held, and when she would make contact with it we used the "paint" command. At first we moved the canvas around to help her make contact. This resulted in keepers being painted as often as the canvas. She caught on very quickly to this step and when we added a new color on the canvas, Keke would aim for the new color. The next step was to give her the brush with the paint added so that she could swipe the canvas where she wanted.

Keke has always been food-motivated, but during these sessions this did not seem to be an important factor. Sessions usually lasted 10 to 15 minutes, and we tried to end the session before she lost interest. We would do one to three sessions a day. Binti would often come over during the sessions to watch, and we would give Binti cardboard with paint on it for her to manipulate. We certainly did not want to ignore her and create bad feelings. The next step possibly would have been mounting the canvas, and letting Keke choose her own colors, but we had to end the project when both elephants were transferred to another facility.

There are various opinions of why elephants might paint, including displacement activities, the attention from the elephant trainers, and the innate behavior to doodle, but they appear to enjoy it. Ruby showed a marked decrease in aberrant behaviors once painting sessions were introduced (Gilbert,1990). Along with the actual painting, all the different materials are of great interest to the elephants. Elephants will examine every item first before actually using any of them, furthering the enrichment time. The enrichment provided by painting is invaluable, with numerous opportunities for introducing new behaviors. The bond between Keke and me was strengthened. I believe that Keke, being a sensitive animal, could sense that I was enjoying the whole process, as I felt she was. This is an enrichment project I would recommend to anyone. If these animals are actually creating art is a question that might never be answered, but that they are benefiting from the enrichment and stimulation it provides is quite apparent. I would like to thank Dr. Robyn Barbiers and Mark Rosenthal for their help with this paper, Jen Swanson for her editing, and everyone in the elephant management team.



Author Michael Skidmore holds the canvas while Keke wields her paintbrush. (Photo by Emmy Rottinghaus)

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## China's Eldest Panda Changchang Dies

China's eldest panda, Changchang, died in the Jinan Zoo on 21 May at the age of 35. Cause of death was pneumonia and organ failure due to advanced age. The average life expectancy of the giant panda is 30 years; Changchang is so far China's eldest panda. Thirty-five years is equal to approximately 75-85 years in a human.

Changchang was born in the Baishuijiang Nature Reserve in Gansu Province. In 1985, in a starved and weakened condition, he was rescued from the reserve and came to the Jinan Zoo in 1995. The male panda weighed 114 kg (251 lbs.) at the time of his death. Prior to becoming ill, Changchang's daily diet consisted of three steamed breads, 3kg of milk and 15kg of bamboo leaves. Beginning the morning of 8 May, the animal refused to eat and became lethargic. Despite efforts by zoo medical staff, including doctors from the Jinan Military Hospital, Changchang died.

The giant panda is also known as the panda bear, bamboo bear, or in Chinese as "Daxiongmao," the "large bear cat." Pi or pixiu are also names used in ancient China to describe the giant panda. The scientific name (*Ailuropoda melanoleuca*) means "black and white cat-footed animal."

Giant pandas are found only in the mountains of central China -- in small isolated areas of the north and central portions of the Sichuan Province, in the mountains bordering the southernmost part of Gansu Province, and in the Qinling Mountains of the Shaanxi Province.

Giant pandas live in dense bamboo and coniferous forests at altitudes of 5,000 to 10,000 feet. The mountains are shrouded in heavy clouds with torrential rains or dense mist throughout the year. Approximately 95% of their diet is made up of bamboo, but the giant panda may also feed on gentians, irises, crocuses, fish, and occasionally small rodents. It must eat 20 to 40 pounds of food each day to survive, and spends 10 to 16 hours a day feeding.

Scientists have debated for more than a century whether giant pandas belong to the bear family, the raccoon family, or a separate family of their own. This is because the giant panda and its cousin, the lesser or red panda, share many characteristics with both bears and raccoons. Recent DNA analysis indicates that giant pandas are more closely related to bears and red pandas are more closely related to raccoons. Accordingly, giant pandas are categorized in the bear family (Ursidae) while red pandas are categorized in the raccoon family (Procyonidae).

Giant pandas are among the rarest mammals in the world -- there are probably fewer than 1,000 left in the wild. Although adult giant pandas have few natural enemies, the young are sometimes preyed upon by leopards. Giant pandas are also susceptible to poaching as their dense fur carries a high price in illegal markets in the Far East. The Chinese government has imposed life sentences for those convicted of poaching giant pandas.

Habitat encroachment and destruction are the greatest threats to the continued existence of the giant panda. This is mainly because of the demand for land and natural resources by China's one billion inhabitants. To offset this situation, the Chinese government has set aside 11 nature preserves where bamboo flourishes and giant pandas are known to live. Sources: *China News Daily* and *USFWS Endangered Species website*.





# REACTIONS

## *A Question and Answer Forum for the Zoo Professional on Crisis Management*

*By William K. Baker, Jr., Curator  
Little Rock Zoo, Little Rock, AR*

### **Question**

What recommendations can you make in regards to non-lethal methods for handling dangerous animals in a crisis?

### **Comments**

Every crisis management situation is inevitably different from the next. This in turn requires a different approach and as a consequence the associated tools must be as varied as the approach itself. A crisis has a habit of taking on a life of its own, almost to the point of becoming a living-breathing thing, which becomes fluid in its existence. In any given circumstance the crisis ebbs and flows from boredom to, at times, desperation.

Aside from training, the second highest priority should ideally be to have a wide selection of equipment to respond to a situation as it develops. When considering that we are in the conservation business, it runs counter to what we do to not attempt to use non-lethal methods first to resolve a crisis rather than a deadly force, which should be the course of last resort.

The most common form of non-lethal response for a dangerous animal crisis is chemical restraint. This may take the form of rifles or pistols, which is CO<sub>2</sub> explosive charge driven, and even the blowpipe or jabstick. The basic tenants of this approach remain unchanged, effectively you are attempting to chemically restrain and immobilize an exotic animal. There are numerous companies that manufacture quality projectile launchers. The most notable examples of this would be Telinject®, Daninject®, and Pneu-dart®. As to which company or projector to use, it depends on your specific collection needs and your annual budget. All three companies produce quality products.

Nets are still a daily staple of zoo operations. Not unlike projectors, it all depends on what your needs are in terms of species and collection diversity. Numerous companies produce nets both as custom and prefabricated products. An uncommon product on the market than can be utilized as well is the net-gun which projects a net over distance to restrain an animal.

A new product that has caught hold in the past decade is OC pepper spray. It is available in three basic configurations: stream, spray, and fogger. After interviewing zoological professionals and having personally used this product in crisis situations, I can vouch for its effectiveness. When used appropriately in a high concentration fogger style, it can remedy a situation in seconds. Counter-assault® manufactures a complete line of products that have been field-tested and aremarketed to the wildlife and zoological industry.

Water hoses and high pressure hoses can be effective in certain situations providing an opportunity to diffuse and redirect animals to night housing when fights break out on-exhibit or during introductions. Typically this method requires two hoses to be truly effective in diffusing a situation.

At nighttime intense light can be a powerful tool in terms of confusing an animal. Many exotic species have a tendency to freeze when spotlighted. While a flashlight can be moderately effective against smaller species, ideally what I am referring to is halogen- or xenon-based lamps that are pushing 100,000 candlepower or better. These are often used by hunters, law enforcement, and scuba divers. Noted manufacturers of this type of product would be Brinkman, Q-Beam, Pelican, and Underwater Kinetics®.

Another way to disorient or diffuse a situation is to use fire extinguishers such as CO<sub>2</sub> or water based units. However, ABC dry chemical units would not be an appropriate choice unless it was a life or death situation.

Noise can be an effective stimulus in certain circumstances, such as whistles. While the more common pea-whistle is somewhat noisy, the better choice would be a thunder or lifeboat whistle, which can be heard for several miles. Another option is to use compressed air horns used for boating or sporting events. These come in a multitude of sizes and are readily available at any sporting goods store. Failing all of the above, you could even resort to using trashcan lids if that was all that was handy at the time of the event.

Sometimes the simplest tools are the best such as shields, barriers, sorting poles, and baffle boards, which can be truly effective when used as a method of directed movement. The key is to know, based on experience, which species this is appropriate for in terms of application. While effective with hoofed mammals, it would be a really bad idea to attempt directed movement with leopards that could easily jump the barrier.

In recent years, law enforcement has begun using rubber projectiles for riot control and incapacitating criminals. These are normally in a rubber pellet or slug type of configuration. While I am not aware of these having been used in an animal crisis, it stands to reason that it could be a new course of action.

The key is to be flexible and adapt to the situation. Use different combinations for best effect, say dart projectors and lights for crisis at night to achieve a resolution. If a method works safely, that's what matters.

**Next Month:** What do you use for crisis reference material?

If you would like to submit a question for this column or have comments on previously published materials, please send them to AAZK, Inc., 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 Attn: Reactions/AKF

(About the Author: Since 1985 Bill has been active in the fields of science, zoology, and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team Leader, ERT Member, Large Mammal Keeper, Senior Keeper, and Zoo Curator at various zoological facilities. His area of research is crisis management in zoological institutions, which draws upon practical experience and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

# **Raising Money for Good Cause - The Rhino Charge**

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*The East African Standard* (Nairobi)

May 18, 2002

Posted to the web at *allAfrica.com*

*By Omulo Okoth*

A unique sporting event initiated by conservationists to assist Kenya Wildlife Service(KWS) resolve wildlife-humans conflict 13 years ago has brought smiles on the faces of people living near the Aberdare National Park.

The project was started in 1988 at a time when Kenya's rhino was severely under threat from rampant poaching for its highly valued rhino horn.

Its aim was to build a fence along sections of the Aberdare National Park in its eastern Salient where rhino were being mercilessly poached. The Salient bordered directly onto farming land.

"Not only could poachers have easy access, but game was able to maraud at night into the park border hunts destroying crops, creating fear and loss of both revenue and, on occasions, lives too," Colin Church, chairman of Rhino Ark management committee, said in an interview.

"The situation fueled an already volatile community who saw no value in protecting either the wildlife or the forest habitat," Church said. The Aberdare's provide the biggest water catchment area for the two million residents of Kenya's capital city of Nairobi.

Over one million farmers living on its lower slopes depend on its rich soils and rainfall. Over 30% of the nation's tea production and 70% of its coffee is grown on its foothills and high slopes. It is home to several thousand elephants, vast numbers of buffalo, forest antelope, leopard, including the illusive giant forest hog, bongo and over 270 species of birds.

The Aberdare is one of the surviving strongholds of the Black Rhino, for which the Rhino Ark was set up in 1988. The Aberdare National Park within 1643sq km (634sq. mi.)of the Aberdare Conservation Area is one of Kenya's prime national parks. It is the place where Britain's Queen Elizabeth stayed on the night she became a monarch.

The Rhino Charge, the only sport of its kind in the world, was started by Rhino Ask, a project formed to specifically assist KWS to finance a 320-km (approx. 200 mi.) fence to encircle the entire Aberdare Conservation Area with a game proof fence, strong enough to resist elephant pressure, powered with electrification to keep wildlife inside the fence and to curb illegal log extraction, snaring and poaching of wildlife. Rhino Ark is the vehicle to manage funds from biodiversity donor agencies to assist with the fence project.

"Once complete, it will protect for posterity one of Africa's greatest conservation regions with its abundant wildlife, indigenous forest and mountain upland. The project is a pioneer in the concept that both humans and wildlife can live in harmony from shared natural resources - brought together by a common fence boundary," Church said.

Rhino Charge is the main fund raiser of the project, having so far raised \$1.5 million (Sh120 million). By October this year, the fence will have covered 160-km (approx. 100 mi.), which is half the entire

fencing project, stretching along the entire Eastern side of the Aberdare range from Nyahururu in the North to Chinga in Othaya division at the southern end of the range. This is already the longest conservation fence in the east African region.

"The fence has brought harmony between the wildlife inside the fence with farmers who live outside it. The farmers can sleep peacefully at night without fear of crop destruction and entry into their land by dangerous game," Church said.

Says Mrs Felicitus Nyambura, a farmer bordering the fence: "When wild animals are on their side, there is no longer a problem. It will be good when everyone has a fence like the one along my farm. Just killing animals is no answer. We must not let our forests be destroyed."

Rhino Charge is an off-road annual competition restricted to 55 four-wheel vehicles that tackle impossible terrain to complete the shortest distance between 12 guard posts by travelling in as straight a line as feasible. This year's Rhino Charge took place on 1 June in the Narok area.

"We restrict it to 55 vehicles because the number can be effectively managed and the environmental impact is minimal," Church said. Each sponsored vehicle must have raised at least the minimum of Sh 1000,000 entry fee. Quite a few have raised over Sh 1 million and others over Sh 2 million.

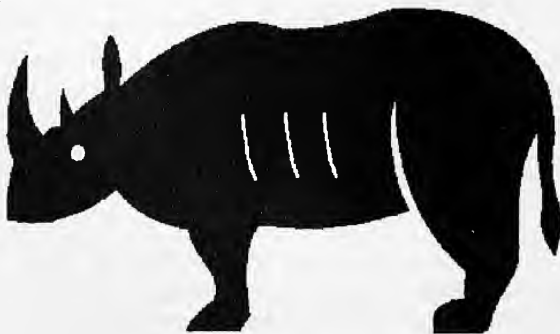
Rhino Ark runs a number of other fund raising events including the more recently launched Hog Charge a children's mountain bike event similar to the Rhino Charge and the Quattro Charge events.

Rhino Charge UK, a skills and endurance fun event for 4x4 off-road drivers, was started four years ago to help raise funds for the Aberdare fence.

According to Church, in the period 2002 to 2005, Rhino Ark will require Sh 180 million (\$ 2.25 million) to complete the fence. Rhino Aries plan includes the establishment of an investment trust fund to run the management process in perpetuity. A further Sh200 million (\$ 2.5 million) is projected.

A report written jointly by Zoo Atlanta, KWS, and the Kenya Forest Department, led by Dr. Thomas Butynski, noted that "As a method of discouraging conflict between wildlife and humans, and especially the damage to crops caused by larger mammals, the fence has proved to be very effective tool."

"If the success of the fencing, where it is in place, is repeated around the rest of the Aberdare Conservation Area, then it is likely that this essential natural resource can be preserved for generations to come," the report concluded.



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# The Water Column

By

*Dan Conklin, Senior Biologist, Florida Aquarium  
Bruce Elkins, Curator of Waters, Indianapolis Zoo  
Kevin Shelton, Associate Curator, Florida Aquarium*

## Troubleshooting Flow and Flow Rates in an Aquariums System

This month I would like to explore flow problems that can come up in filter systems, especially complex systems. This issue was brought up by several occurrences we have experienced over the years.

Most flow problems, once you understand the cause, are relatively easy to correct but finding that cause can often be an exercise in frustration. I would like to relate a couple of cases and point out the lessons learned in each.

Case 1. We have a large Amazon River tank (~18,000 gals) and in it are several species of catfish, pacu, arowana, plectos, and cichlids. This tank has been in operation for more than ten years. It was a very stable system, with a wet/dry biofilter, rapid sand filter, heat exchanger and two pumps. Over one night we found it had developed a large number of very small bubbles (micro bubbles). While not only looking bad, they made the water look cloudy; they were small enough to actually dissolve into a fish's fins or gills. Once there, they will accumulate into larger and larger bubbles causing all sorts of damage. Inspections of the pumps, and sand filters turned up nothing out of the ordinary. Our first attempt at correction was to increase the water level in the wet/dry biofilter. Our thinking was if the level was too low then the bubbles would be drawn back to the exhibit rather than degassing in the filter. For the first 12 hours, we saw the bubbles dissipate. When we arrived the next morning the bubbles were back. It turns out all we had done was create another body of water for the bubbles to saturate before flowing back into the exhibit. Our second attempt was to decrease the flow rate through the biofilter. Perhaps the water was receiving too much agitation. Luckily, this proved wrong immediately with no improvement in the exhibit tank. Our next attempt was to investigate the strainer basket on the pump. Again our thinking was that a leak in the lid gasket could draw in air and cause the bubbles. Again, no luck. By now we were getting very concerned about the health of the fish and decided to shut the system off to at least dissipate the bubbles. This worked, but while the system was off, we noticed a small amount of water below one of the pump impeller housings. Closer inspection of the pump housing still revealed no leaks, until we opened the water supply to the pump before turning it back on. Luckily, we were watching and noticed a pin size spray emitting from the impellor housing. Finally, we had found the leak.

### Lessons learned:

1. A very small leak can cause a big problem.
2. Micro bubbles will most often indicate a suction side pump leak. The suction side of the pump has a negative pressure and will tend to pull air into the piping. The pressure side of the pump will force water out of a leak. Also, to form micro bubbles there needs to be a high volume of agitation and in most systems this will only occur in the impellor of the water pump.
3. Turning off a filter system will often tell you more than close inspections with it running.

Case 2. This problem occurred in a much more complicated system. The system consists of several exhibit tanks connected off a common filtration system. The filtration system includes a common reservoir, micromesh bag filters, UV sterilizer, chiller, protein skimmer, and wet/dry biofilter that also acts as a bypass for the exhibit loop. Each exhibit had a flow meter in-line to allow us to set the flow at a specific level. In this case, the pump was shut down to allow us to clean the drain lines from the exhibit. When the system was restarted, we noticed all the flow levels to the exhibits had decreased. We tried adjusting the levels back to normal but could only get about half the exhibits back to the original levels. The remaining exhibits all had further reduced flow. Obviously, we were using all the flow the system was supplying. Our first attempt was to check the filters; which were clean, and then the strainer basket on the pump; which was also clean. Visual inspections in the UV sterilizer pipes and the chiller pipes showed no clogging. The flow reduction was not coming from any of those sources. We were down to figuring out whether the pump was wearing out or if a clog was occurring in one of the other piping runs. Then we noticed that the biofilter level was a little higher than normal. It was not even an inch higher but since this also acted as the bypass it was enough to lower the flow to the exhibits. A nudge on the bypass valve to close it up a little more and we were back to the flow levels we wanted. Apparently, when the pump was shut down and turned back on, the flow changed slightly and the bypass now carried more water than it had. We thought the valve might have moved but it was marked and had not changed from its settings.

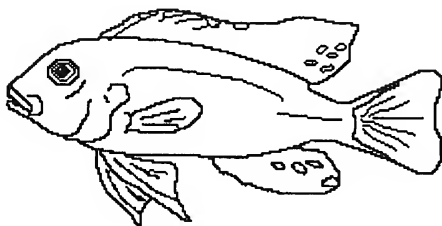
#### Lessons learned:

1. Water flow through a system is not always stable. Changes do occur over time, and will often show up when the system is shut off and restarted.
2. Systems are always a balancing act and a bypass can carry a lot of water!
3. Look for the simple things first. I know this is common sense, but on a complex system the simple stuff is often the last checked.

Water may be the fluid of life, but it can also be the stuff of headaches. Especially for those in charge of making sure it comes and goes, as you want it.

A quick reminder: The authors of the Water Column are always willing to answer any questions you might have. They can be about filtration systems, water chemistry, or aquatic life. If we don't know, we will find out for you! Thanks.

Each month we will also be answering a few questions from you. We will try to pick questions that are pertinent to that month's topic. We also welcome feedback from the readers. Questions and comments can be submitted to us by email at: Dan: [dconklin@flaquarium.org](mailto:dconklin@flaquarium.org)/ Kevin: [kshelton@flaquarium.org](mailto:kshelton@flaquarium.org)/ Bruce: [belkins@indyzoo.com](mailto:belkins@indyzoo.com)/ Or by mail at: Kevin Shelton, The Florida Aquarium, 701 Channelside Drive, Tampa, FL 33602



## BRANCHING OUT



## 2002 JOINT NATIONAL CONFERENCE OF THE AMERICAN ASSOCIATION OF ZOO KEEPERS and ASSOCIATION OF ZOOLOGICAL HORTICULTURE

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OCTOBER 6-10, 2002**

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- Don't forget that the deadline for conference registration is August 23, 2002!! The deadline for hotel reservations is September 3, 2002. Registration forms can be found in the March 2002 issue of the *Animal Keepers' Forum* and appears again in this issue. Forms can also be downloaded off the website.
- Don't forget that papers are due by September 6, 2002. Information will be mailed to each presenter.
- In case you haven't seen it, the website is: [WWW.AAZKAZH2002.ORG](http://WWW.AAZKAZH2002.ORG).
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OCTOBER 6-10, 2002

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INSTITUTION \_\_\_\_\_  
POSITION/TITLE \_\_\_\_\_  
E-MAIL ADDRESS \_\_\_\_\_  
Presenting a Paper/Poster/Workshop? \_\_\_\_\_ Bringing an auction item? \_\_\_\_\_  
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**\* Reservations can be made by calling 1-888-627-8538, or Fax: 1-816-391-4441, or mail forms to: Westin Crown Center, One Pershing Road, Kansas City, MO 64108-2599**

**\* Not responsible for roommates**

Hotel reservations must be made by **3 September 2002**. Reservations made after this date will be made on a space available basis only and at the prevailing non-conference rate. Mention that the reservation is for the American Association of Zoo Keepers or Association of Zoological Horticulture conference. Once you have guaranteed your reservation, cancellations must be made 24 hours prior to the date of your arrival or you will be liable for one night's room rate and tax. This amount will be deducted from your deposit or billed through your credit card.

# PRE AND POST CONFERENCE TRIPS

## PRE-CONFERENCE TRIP

*Omaha Zoo and Surrounding Area* – Friday/Saturday, October 4&5

This two-day trip to Omaha starts with a stop just north of Kansas City at Squaw Creek National Park, a natural wetlands that hosts the migration of thousands of native birds and other various wildlife. That afternoon includes behind-the-scenes tours of the Safari Park located just outside of Omaha. The park is home to many native species and grasslands. That evening, supper will be provided by the Omaha AAZK chapter and delegates will stay over night in lodging at the Omaha Zoo. Saturday you will tour the Omaha Zoo and return to Kansas City that evening. The trip cost includes transportation, light breakfast, tour of all three parks and lunch at the zoo. Space is limited.

**COST \$40.00** – special thanks to the Omaha AAZK Chapter and Zoo for sponsoring Friday evening's meal and lodging at the zoo.

## POST-CONFERENCE TRIPS

*St. Louis Zoo and Surrounding Area* – Friday/Saturday, October 11&12

During this two-day trip you will be at the Missouri Botanical Gardens and spend the day touring their gardens, eat lunch in their Garden Caf   and tour behind-the-scenes in their greenhouses. Delegates will be having dinner in the downtown area where we can visit the Arch or stroll around the historic Landing area. The following morning you will head to Forest Park where you have the options of seeing the St. Louis Zoo, Natural History Museum, Science Center and Art Museum all free of charge. You will return to Kansas City that evening. The trip cost includes transportation, lodging, light breakfast, Botanical Gardens and lunch at the zoo. Minimum of 15 delegates needed for trip to run.

**COST \$70.00**

*Springfield, Mo and Surrounding Area* – Friday/Saturday, October 11&12

During this two-day trip, you will be spending Friday hiking and cave-exploring at the Fuson Conservation Area. You will get a glimpse of the Smittel Cave inhabited by endangered species of Indiana and Gray bats. You will then explore the Little Smittel and Lowell Caves. After spending the night in Springfield you will visit the Dickerson Park Zoo the next morning. Some additional sightseeing will be done around Springfield and surrounding areas on the way home that afternoon. The trip cost includes transportation, lodging, light breakfast and caving lunch. Minimum of 15 delegates needed for trip to run.

**COST \$60.00**

**For more information contact Angie Maxey at (816) 513-5700 ext. 25705.**

# Zookeepers Without Borders

## Detroit Zoological Institute

By

*Suzi Leonard, Research Associate  
Detroit Zoological Institute, Royal Oak, MI*

There's a little zoo on the grounds of a large university in the most picturesque city in Peru. The Detroit Zoological Institute has launched its first "Zookeepers Without Borders" project there at the University of San Antonio Abad/Cuzco, and you're invited to participate.

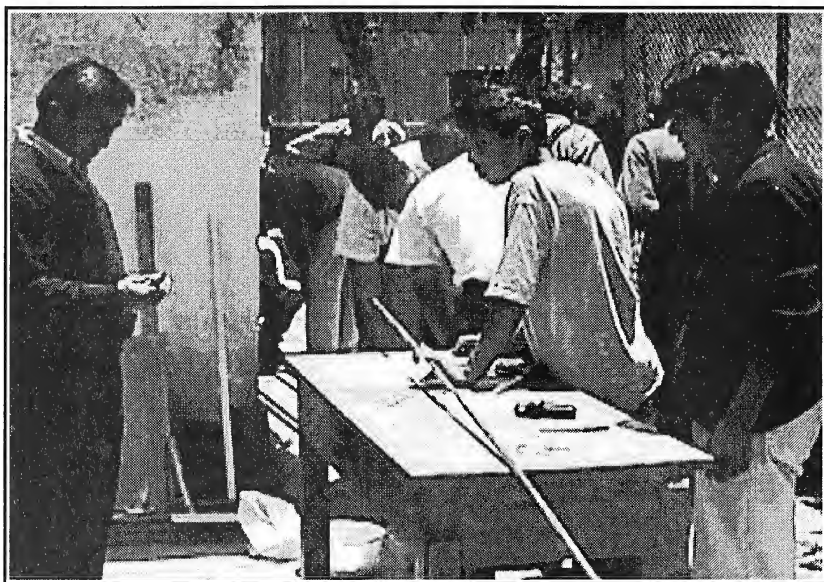
The inaugural "Zookeepers Without Borders" team of five spent 10 days during February working hand in hand with the two dedicated local keepers, assisted by about 15 University biology students, and encouraged by professors, deans and University administrators. The zoo houses a collection of about 40 species, including two breeding families of Andean condor, several Andean Fox, three puma, five spectacled bears, brown and white-fronted capuchins, scarlet and green-winged macaws, one king vulture, a herd of grey brocket deer, a collared peccary, way too many great horned owls and mountain caracaras, Andean tinamous, agoutis, Andean geese, etc.



First Planning Session for Zookeepers Without Borders - seated left to right are Laurie Hartung, Angela Yang, Michelle Seldon-Koch, and Craig Schultz.

One of the major projects completed during February was the division of the large Andean condor flight cage, to separate the two breeding pairs and their offspring. Another was the installation of shift doors for the singly-housed spectacled bear and for the other singly-housed animal—the tayra. This now protects the keepers during cleaning and feeding times and doubles the space for both animals. The team also implemented slight alterations for the feeding regimens for the bears and pumas to lessen the aggressive episodes over food. They rebuilt a 7-foot square (0.65 sq. m) enclosure for a saddleback tamarin that had been housed in a 3-foot by 2-foot (.9m x .6m) wire cage, and moved the boa constrictor out of its suitcase and into a spacious plywood box with appropriate ventilation.

Needless to say, enrichment was the byword of this first work team and they devoted a lot of time not only to making enrichment items, like hammocks and rope swings for the primates, but to explaining to the keepers and students the nature and importance of enrichment. They scrounged University grounds for discarded props like large, pruned limbs, and pulled grasses and forage off native trees. It was rewarding to see the coatimundis climbing, perhaps for the first time; to watch the singly-housed spectacled bear stuffing all his evergreen forage into his small sleeping cave; to catch the agoutis "scatterhoarding" in their new, expanded enclosure; and of course, to see the young spider monkey swinging through his rope maze toward his new burlap hammock.



Professor Eliseo Espinoza B., Director of the zoo in the University of San Antonio Abad/Cuzco, is shown with biological sciences students helping him complete a pole syringe.

And, as you may have guessed, when keepers work together, all was not brutal labor. The group of five, which included Angela Yang, Disney's Animal Kingdom; Suzi Leonard, Detroit's research associate in South America; Michelle Seldon-Koch, Detroit Zoological Institute; Laurie Hartung, St. Louis Zoo; and Craig Schultz, Disney's Animal Kingdom, took time out for a city tour, a quick day trip to Macchu Pichu and to the Sacred Valley's Sunday market in Pisac. Cuzco is the shopping mecca of South America and no shops went unexplored. Fortunately, they're open until 9 or 10 p.m. each night.

This project is open to all professional zookeepers. While Spanish is the language of Peru and is extremely handy, there are several University students who are quick to offer translation help. Detroit Zoological Institute requires a contribution of \$500 in materials, like enrichment items, etc., from each participant. Air transportation, also, must be booked into Lima, Peru and from Lima to Cuzco. Comfortable, safe housing can be recommended for \$10 per night or less and food costs run no more than \$10 per day. Work schedules and lengths of stay are quite flexible. Please contact Scott Carter, Curator of Mammals at DZI, at [scarter@detroitzoo.org](mailto:scarter@detroitzoo.org) or Angela Yang, Disney's Animal Kingdom, at [Angela.Y.Yang@disney.com](mailto:Angela.Y.Yang@disney.com) for further information or to reserve your work dates.

## Greater Houston AAZK Chapter

The 2002 Greater Houston AAZK Chapter officers are:

President.....Carolyn Matthews  
Vice President.....Kelly Russo  
Secretary.....Apple Hansen  
Treasurer.....Kristin Moro  
Chapter Liaison.....Kim Shotola

GHAAZK has a new and exciting logo (see below). This creative artwork represents all sections at the Houston Zoo and was designed by children's zookeeper Meghan Patschke.



We have been involved in various projects. The Center for Ecosystem Survival continues to receive money from the two conservation parking meters we monitor at the zoo.

Staff, docents and volunteers contributed funds to the Afghan Animal Relief Fund. We provided some headlamps, batteries and chargers to Nature Seekers, Inc. for their sea turtle research project in Trinidad.

We had a wonderful bake sale and a successful garage sale to benefit our chapter. An unexpected anonymous donation to our chapter was a welcome surprise.

We are not making preparations for our next Bowling for Rhinos event and a spectacular Halloween party Chapter fundraiser.

--Kim Shotola, Chapter Liaison

# Chapter News Notes

## Milwaukee AAZK Chapter

In April we had our Bowling for Rhinos event and managed to raise \$1154.00 this year. Another successful result for this fundraiser for our Chapter.

Also, our zoo just had its Conservation Weekend.. Our featured conservation topic was iguanas, more specifically, jamaican iguanas. Through the sale of \$1 grab bags, we managed to raise \$245.00 which was donated to the Jamaican Iguana Project.

--Earl Conteh-Morgan, Liaison

## Chapter Logo Registry Project Reveals Several Newly Adopted Chapter Logos

A number of our AAZK Chapters have recently adopted new logos. They are presented below. As we receive new and updated logos from AAZK Chapters, we will present them here in Chapter News Notes. *Ed.*

## New England Chapter

**Designer: Daren Dochterman**

**Adopted: 2001**



**Central Florida Chapter of AAZK**  
**Designer: Jeff Wells**  
**Adopted: April 2000**



**Orange County Chapter of AAZK**  
**Designer: Julia Walz**  
**Adopted: April 2002**



**Palm Beach AAZK**  
**Designer: Diane Kaye and Michelle Dzama**  
**Adopted: July 2001**



**Southern Ontario Chapter**  
**Designer: Kathy Cunningham**  
**Adopted: 2000**



### **Have You Sent in Your Chapter Logo Update?**

A notice was sent to every Chapter requesting verification of the logo we currently have on file for their Chapter; or requesting submission of a newly adopted logo for inclusion in the 2002 edition of the AAZK Chapter Logo Registry. Chapters submitting new logos should send a clear, clean copy along with information on the designer and the date the logo was adopted. Logos may be sent on disk as JPEG or TIFF files. When mailing, DO NOT fold the logo. If you have not sent in your response, please do so ASAP. If, for whatever reason, you did not receive a logo request packet from AAZK/ AKF, call Susan Chan at 1-800-242-4519 to request one. Chapters who do not respond will be represented by the most recent logo we have in our file for them in the upcoming Logo Registry.

Send to: Logo Registry, AAZK, 3601 SW 29th St., Ste. 133, Topeka, KS 66614-2054.

# Legislative Update

*Compiled by Georgann Johnston  
Legislative Advisor  
Sacramento, CA*



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## **Proposals to Allow the DOD to Circumvent Environmental Protection Laws**

In the past few months, two proposals have passed the House of Representatives regarding exemptions for the Department of Defense (DOD) from established environmental protection laws. The issues are set to go before Senate Committees in June or July of 2002.

The first proposal would grant the DOD an exemption from portions of the Endangered Species Act at or near military installations in the United States. Specifically, the House-passed proposal exempts the DOD from following provisions of the ESA that prohibits them from tapping into resources (critical habitat) necessary for the survival of endangered and threatened species. The initial proposal involves a military base called Fort Huachuca in Arizona where the DOD is looking to expand its facilities. Such development will require the military to divert water from the nearby watershed - water that would normally flow into the San Pedro River, a Congressionally designated Riparian Conservation Area and one of the richest biological reserves in all of North America. The habitat provides homes for more than 400 bird species and is a critical stopover for nearly one-half of all migratory birds in the U.S.

The second proposal comes from the Senate Armed Service Committee which passed a portion of the DOD authorization bill exempting the DOD from the Migratory Bird Treaty Act and the Endangered Species Act. A similar bill has been passed by the House and the Senate's Defense authorization bill now awaits action on the Senate floor. An analysis by the Audubon Society states that the proposal would allow the DOD to eradicate unlimited numbers of birds and destroy their nesting areas without the need to show that national security is at stake. The Audubon Society states that the proposal gives the DOD unprecedented self-regulatory authority, with no oversight and no accountability. Under the proposal, the DOD would determine what impact on migratory birds is acceptable, without any input from or oversight by the U.S. Fish & Wildlife Service or any other environmental interest groups.

The House passed this second measure by a mere 13 votes. Environmental groups including Audubon, World Wildlife Fund, National Wildlife, and others, are encouraging citizens to contact their representatives to point out that when national security is not at stake, no government agency should be above the law, including the laws that sustain America's bird and wildlife. Additionally, the President of the U.S. already has the power to grant government agencies, including the DOD, relief from our nation's laws when national security is at risk.

To express your opinion about this measure you can call the Capitol Switchboard at (202) 224-3121 and ask for both of your state's Senators by name so that your opinion can be recorded. *Source: Audubon Advisory 31 May 2002*

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## **Tongass National Forest Subjected to New Logging Operations**

The U.S. Forest Service (USFS), with the full backing of the Bush Administration, announced its intention to allow new logging and road building in roadless areas of the Tongass National Forest. This announcement is the Administration's loudest assault to date on the Roadless Area Conservation Rule (Rule) - a publicly mandated initiative that placed a moratorium on new road construction in roadless areas of all national forests. Prior to this announcement, the Bush Administration had been quietly working to weaken the Rule, which included lands within the Tongass now on the chopping block.

The Tongass National Forest is the largest forest in the United States, and it includes the largest amount of old growth temperate rainforest on the planet. It stretches for 500 miles across Alaska's southeastern coastline - a dramatic landscape of glacial fjords, rugged mountains, misty rainforests, and scattered stands of giant conifers. Although these stands of large diameter old growth trees are rare on the Tongass and represent the most valuable fish and wildlife habitat, this is where most of the timber harvest has occurred. If roadless areas of the Tongass are not protected, the forest diversity and ecosystem integrity of our largest national forest will be placed at serious risk. The Tongass National Forest provides habitat for the highest density Bald Eagle population in the world. It also supports high density populations of black and grizzly bears and important population of wolves, wolverines, deer, mountain goats, goshawks, marbled murrelets, other forest birds and healthy populations of all five species of anadromous salmon. New logging and road building in the remaining roadless areas of the Tongass will jeopardize these populations.

According to numerous media reports and studies, logging and road building on the Tongass occurs at an economic deficit. As reported in the San Francisco Chronicle in June 2002 "road building and low stumpage fees have amounted to huge subsidies for the timber industry, currently amounting to about \$35 million annually" even though the industry "only employs 1,100 people, for a net cost to the U.S. taxpayers of \$32,000 per job per year." Logging will also damage the region's two most important industries: tourism and fishing.

Before moving forward, the USFS must allow the general public to weigh-in on their new Environmental Impact Statement. This 90-day comment period is just underway. At the end of this 90 days, the USFS must release its final decision. You can send your comments for consideration via the web by logging on to <http://www.capitolconnect.com/audubon/contact>. *Source: Audubon Advisory 31 May 2002*

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### **Koala Sterilization Program Implemented in Australia**

The Department of Natural Resources and Environment in Victoria state, Australia is testing immunosterilization to control the fecundity of koalas. The vaccine, given to 30 female koalas on Snake Island, blocks fertility by stimulating the immune system. Based on proteins from pigs and brush possums, the vaccine prevents the sperm cells of a male animal from overriding the immune defenses of the female, which it must do to achieve conception.

The experiment was announced one day after the President of the Nature Conservation Society of South Australia argued that attempts to control the koala populations by surgery and relocation should be halted. As an example, there are currently an estimated 5,000 koalas on Kangaroo Island, where they pose a menace to native birds and flora. Likewise, on the mainland the koala population has grown to between 27,000 and 33,000, causing depletion of resources for other species native to that country. *Source: Animal People News May 2002 Vol. XI #4*

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### **Farm Bill Signed by President Bush**

In late May 2002, President George W. Bush signed the Farm Bill into law - a sweeping measure that sets policies, guidelines, and secures funding for agriculture programs for the next ten years. Included in the new law is \$17.1 billion in funding for conservation programs over the next ten years. This is more than Congress has allotted for these programs before. These programs offer farmers financial incentives to take farmland - specifically wetlands and grasslands — out of production to preserve these habitat for the birds and wildlife who count on them for survival. These programs include the Wetlands Reserve Program (WRP), the Farmland Protection Program (FPP), the Wildlife Habitat Incentives Program (WHIP), and the creation of the Grasslands Reserve Program (GRP) that will help save habitat for migratory songbirds, grassland birds, and other wildlife. Unfortunately, the measure is already under attack by certain members of Congress — in particular Senator Jesse Helms — who wants to remove the environmental protection measures and allow indiscriminate use of public and private land for agricultural purposes. While the first round of the battle was a winner, the contest is not over yet. *Source: Audubon Advisory 17 May 2002 and 31 May 2002*



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## **\$85.7 Million in Grants Available to States for Endangered Species Conservation**

The U.S. Fish and Wildlife Service (Service) is seeking proposals from states and U.S. territories interested in acquiring land or conducting conservation planning for endangered species. Three innovative grant programs, totaling \$85.7 million, are available to states willing to purchase land or improve habitat for federally protected species. The grants are expected to be awarded summer 2002.

"Local involvement is the cornerstone of conservation success," said Service Director Steve Williams. "Through programs such as these, the Service is building stronger partnerships with the states and finding new ways to support and work with landowners willing to provide valuable habitat for wildlife". The grants will be awarded from the Cooperative Endangered Species Conservation Fund, authorized under the Endangered Species Act. This fund provides grants to states and territories to support their participation in a wide array of voluntary conservation projects for listed species, as well as for species either proposed or candidates for listing. By law, the state or territory must contribute 25% of the estimated program costs of approved projects, or 10% when two or more states or territories undertake a joint project.

The three grant programs are: (1) Recovery Land Acquisition Grants (\$17.8 million) - These grants provide funds to states and territories for acquisition of habitat for endangered and threatened species in support of approved recovery plans. Acquisition of habitat to secure long-term protection is often an essential element of a comprehensive recovery effort for a listed species; (2) Habitat Conservation Planning Assistance Grants (\$6.6 million) - These grants provide funds to states and territories to support the development of Habitat Conservation Plans (HCPs), through the support of baseline surveys and inventories, document preparation, outreach, and similar planning activities; and (3) HCP Land Acquisition Grants (\$61.3 million) - These grants provide funds to states and territories to acquire land associated with approved HCPs. Grants do not fund the mitigation required of an HCP permittee; instead, they support conservation actions by the State or local governments that complement mitigation.

For more information about these grants contact: U.S. Fish and Wildlife Service, Division of Consultation, Habitat Conservation Planning, Recovery and State Grants, 4401 N. Fairfax Drive, Room 420, Arlington, VA 22203, 703-358-2106. Information also can be accessed at <http://endangered.fws.gov/grants/>. Source U.S. Fish & Wildlife News Release 17 April 2002

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## **Angry End to IWC Meeting and Related Whaling Updates**

The annual meeting of the International Whaling commission ended with its angry host, Japan, and other pro-whaling nations embittered by their failure to gain approval for a resumption of commercial whaling denying "Arctic natives in Alaska and Russia their traditional whale-hunting quotas" says the *New York Times* on 5/26. With the rejection of whale sanctuaries and Japan promising to increase its "scientific whaling many wondered is the stalemated meeting "rendered the 56-year-old commission unviable as a mechanism to regulate whale hunting."

Earlier in the meeting pro-whaling nations were "dealt an early defeat" when Iceland was rejected for reinstatement as a voting member says Reuters News Service on 5/21. With a number of new nations added to the IWC, and the Japanese accused of "vote buying", Iceland's reinstatement was "seen as a crucial step" in "shifting the balance of power back to nations like Japan and Norway that favor a resumption of commercial whaling."

In related whaling news reported by GREENlines Issues:

- DNA tests on whale meat for sale in Japanese stores reveals that it comes from endangered humpback, sei and finback whales reports Reuters News Service on 5/17. Although all whale meat sold in Japan should come from its "scientific" whaling program which is supposed to hunt allegedly abundant species, conservationists say the "discovery showed only a complete ban on whaling would keep endangered species safe."

• A federal judge has lifted a temporary injunction allowing the Makah tribe to proceed with hunting a limited number of gray whales as provided for by an 1855 treaty says the *Seattle Post-Intelligencer* in a 18 May report. The judge did not make a final decision on a lawsuit challenging the hunt on public safety and environmental grounds. The small northwest Washington tribe killed its first whale in 1999, some five years after the gray whale was removed from the endangered species list in 1994 and has since been dogged by lawsuits brought by “animal rights activists” who want to stop further hunting.

• Researchers have revealed that the population of eastern North Pacific gray whales has “dropped in the past four years from an estimated high of more than 26,000 to less than 18,000” says an 18 May Associated Press report. While marine biologists expect a rebound and say the drop is a natural fluctuation “related to low food supplies in the whale’s Arctic feeding grounds,” some conservationists “consider the decline an indication that the whale’s population is still threatened by pollution, climate change, dwindling food supplies - and hunting.”

• A report by the IWC Scientific Committee has found that Antarctic blue whales “show little signs of recovery” after nearly four decades of protection says a 20 May Greenpeace new release. “Intensive surveys” have sighted only 75 blue whales in the last 20 years, The report also indicates that Southern Hemisphere minke whale populations are “less than half” of previous estimate and new surveys show North Atlantic minke whales are not as abundant as “previously thought” with an “increased level of uncertainty about the population estimate.”

• Mexico has signed an accord protecting over 1 million square miles of its waters says Reuters 5/28. According to Greenpeace Mexico’s biodiversity campaign, the sanctuary is the “largest protected area for whales in the world,” benefitting some 39 whale species that inhabit Mexican waters. *Source: From The Endangered Species Coalition, A daily news digest about endangered species, biodiversity related issues and the people working to stop extinction. [www.stopextinction.org](http://www.stopextinction.org)*

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## **Elephants Remain Under the Gun**

Dr. Richard Leakey, who is credited with “saving Kenya’s elephants from destruction by ivory poachers more than a decade ago,” warns that revival of the ivory trade has placed the species “at risk across the world” says BBC News 5/14. Asian elephants have “suffered horrendous losses” and it’s “entirely plausible that 80% of the wild Asian elephants” have been killed in the last decade with only 30,000 to 35,000 left. He “fears that African elephants will be targeted next.”

In a related item on the pressure to restore the ivory trade, Zambia has joined South Africa in proposing that CITES lift the international ban on trade in elephant ivory” at its upcoming November meeting says Environmental News Service on 5/15. The proposal has “raised fears that criminal gangs of poachers might use the legal ivory trade as a mask for their illegal activities” and a member of Zambia’s Anti-Corruption Commission warned that lifting the ban would be “courting trouble because the poaching scourge will resurface with unprecedented ferocity.” *Source: GREENlines Issue #1630 5/21/02*

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## **Mountain Gorillas Slain by Poachers**

Poachers have killed two of Rwanda’s last remaining mountain gorillas and taken a baby gorilla reports Reuters on 5/15. A second youngster, 13-month-old Ubuzima whose mother was killed by poachers, is doing well after a rescue effort involving the Englewood, Colorado-based Mountain Gorilla Veterinary Project. He has been reintroduced to his natal group who are caring for him. The other infant is still missing. The poachers are believed to be part of “larger criminal ring” that supplies the illegal wildlife trade and both of the “highly endangered” gorillas killed were females, members of a Rwandan population that numbers about 350. There are about 650 known mountain gorillas. They live in the equatorial African countries of Rwanda, Uganda and the Democratic Republic of Congo. According to the Mountain Gorilla Veterinary Project, two people have been arrested in connection with the attack. *Source: GREENlines Issue #1634 5/28/02 and RockyMountainNews.com*

# Catch a Tiger By the Tail: Tiger Training at Disney's Animal Kingdom

By

Angela Miller, Animal Keeper  
Disney's Animal Kingdom  
Walt Disney World Company

P.O. Box 10,000, Lake Buena Vista, FL 32830

## Introduction

Husbandry training is an integral part of the daily animal management for the entire collection at Disney's Animal Kingdom (DAK) (Millwood and MacPhee, 2000). Husbandry training as a management tool is utilized in selected focus species including tigers. DAK has a collection of 0.6 tigers (*Panthera tigris*). The animals were born at a private institution in Texas and managed there in a free-contact regime. Since arriving at DAK, the tigers have been managed exclusively in a protected contact regime. One of the main goals of our training program centered on expanding the range of health care procedures within a protected contact environment. The benefits of this type of training program includes reducing stress through an increase in the animals' willing participation in husbandry care and decreasing the need for more physically invasive procedures (Hylton, 2001). The proactive approach to training at DAK and the detailed training plans facilitate the daily management of our animals.

## Description of Behaviors Trained

A tiger crate was originally designed to transport the tigers if necessary. The crate turned out to be a great location to allow safe access to the cat. Immediately after installation at the tiger holding building, the tiger team began to plan the behaviors that could be trained in the crate with the six female tigers in the collection. The possibilities seemed endless. Monitoring body weight was our



Tiger crate before modifications.

first goal. Weigh bars placed on top of wooden supports were set up underneath the crate. The tigers were introduced to the crate. Once the tigers were comfortable in the crate, the guillotine door was shut, closing them in the crate. Weighing the tigers soon became part of the weekly routine. In order to increase our access to the cat's body and allow the training of more behaviors, the crate needed a few modifications. Several sliding access doors were added to three sides of the crate. The veterinary team, behavioral husbandry staff (who focuses on coordinating animal enrichment and training in our collection), and the keepers partnered to develop a list of potential voluntary medical procedures. The tiger team then focused on one procedure at a time. Voluntary blood draws quickly became our first venture. There were two main areas of focus for this behavior. First, the tigers needed to get into a specific position with

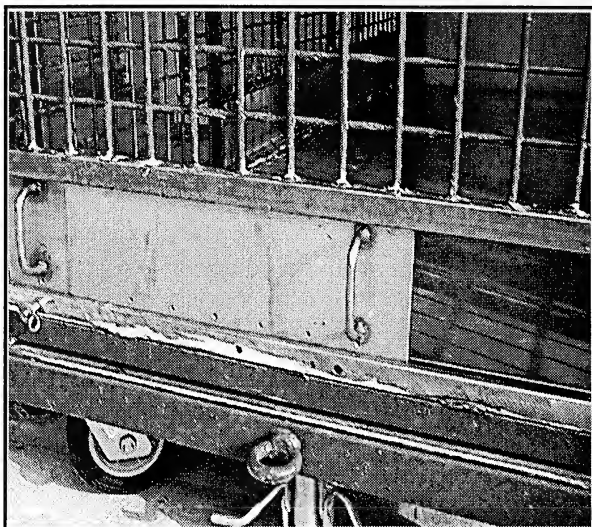
their tails extended out of the crate, remain there for several minutes and allow us to manipulate their tails. Secondly, the tigers needed to be desensitized to a wide variety of new pieces of equipment required for blood draws.

## Blood Draws

The positioning of the tiger for a blood draw required the training of several new behaviors. First, the cat was trained to enter the crate calmly. The cat then learned to turn around and face the opposite direction and lay sternal so the tail was accessible. The cat was required to move forward in the crate until a second keeper could safely pull the tail out of a small access door with a snake

hook. The cat then was trained to back up while the second keeper held the tail until the entire tail was out of the access door. Next, the cat was asked to hold this position as manipulation of the tail was increased. Scratching the base of the tail seemed to keep the tigers very calm in the crate.

The tigers needed to be habituated to several medical props and various degrees of tail manipulation. A tote caddy with a grip handle used for carrying medical supplies, called a medical grip, became a regular part of crate training sessions. The veterinary technician who would actually be drawing the blood needed to build trust with the tigers and began attending at least one crate training session with each tiger every week. To facilitate habituation to the presence of a vet tech, the tiger keepers wore a veterinary technician shirt for the first few training sessions. The keepers also partnered with the vet team to make sure the trained behavior would easily facilitate a blood draw. The keepers slowly added new steps to the desensitization process. The first step was holding and scratching the tail, next the fur was parted and the tail was lightly pinched. The tail was then wet with water and then later with alcohol. Next, the tail was then touched with a paper clip. The tigers also were desensitized to the sound of electric clippers in case we needed to shave a small section of fur. The tiger's tail area was pricked with a very small needle and then pricked with a needle into the vein. The final step of the process was an actual blood draw. Our very first attempt was successful! Our final goal was to collect enough blood to run pre-immobilization blood work for all of the tigers before their annual exams. The team currently collects quarterly blood samples on all of the tigers.



Tiger crate showing modifications made by addition of keeper access doors.

### Rectal Temperature

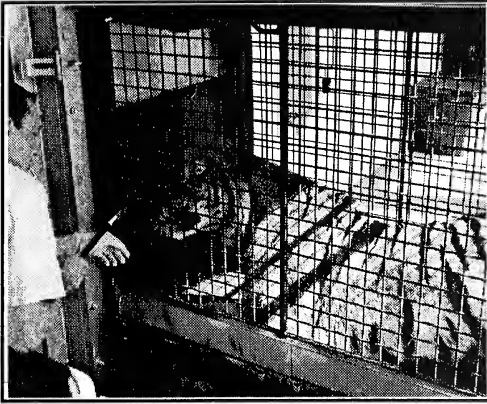
Obtaining a rectal temperature became the next project. Using the same body positioning as for the

blood draw, the tail was simply pulled out of the access door and a lubricated digital thermometer was inserted rectally and held in place until the temperature was acquired.

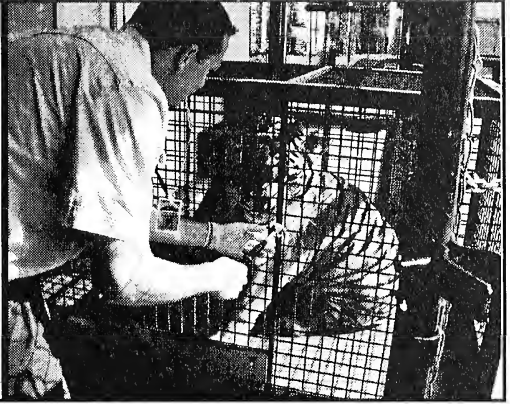


Acquiring rectal temperature on a tiger at Disney's Animal Kingdom.

## Blood Draw Protocol Sequence



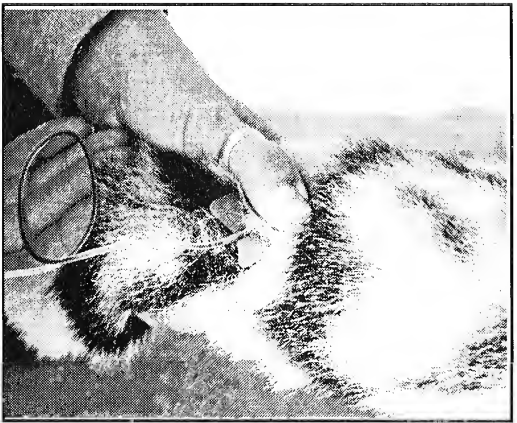
Move Up



Back Up



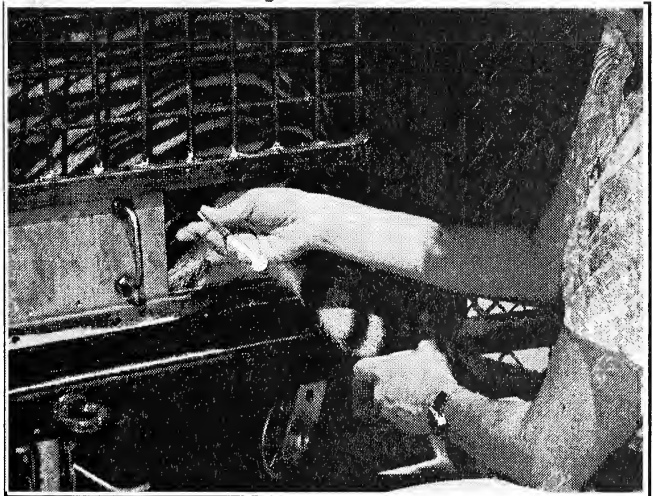
Blood Draw



Blood Draw - Close Up

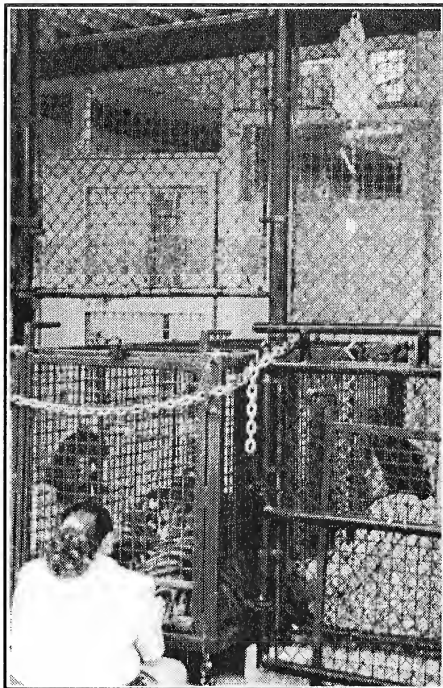
### Intra-muscular and Subcutaneous Injections

The tiger team then started training for intra-muscular and subcutaneous injections. There are several potential uses for an intra-muscular injection including administering routine and medically necessary vaccines/injections as well as potentially giving voluntary injections of immobilization drugs. Since the tigers became very comfortable in the same body position used for the blood draw, the behavior for intramuscular injections remained the same. While the tigers' tail was out of the access door, injections were given in the



IM Injections

upper thigh/buttock region. Saline was used at first. The amounts were increased at each training session until a sufficient amount of solution was injected. The final step was injecting a stingy antibiotic to simulate immobilization drugs.



Subcutaneous fluids  
being administered.

Subcutaneous needle sticks also have multiple potential uses including injections of vaccines, injection of fluids to decrease dehydration, and aspirating abscesses. Again, the tigers are in the same body position used for the blood draw, but in this instance they are asked to lay sternal with their back end in an over position. The vet tech is then able to access the back region through the sliding panels on the side of the crate.

### **Rainbow – The True Test**

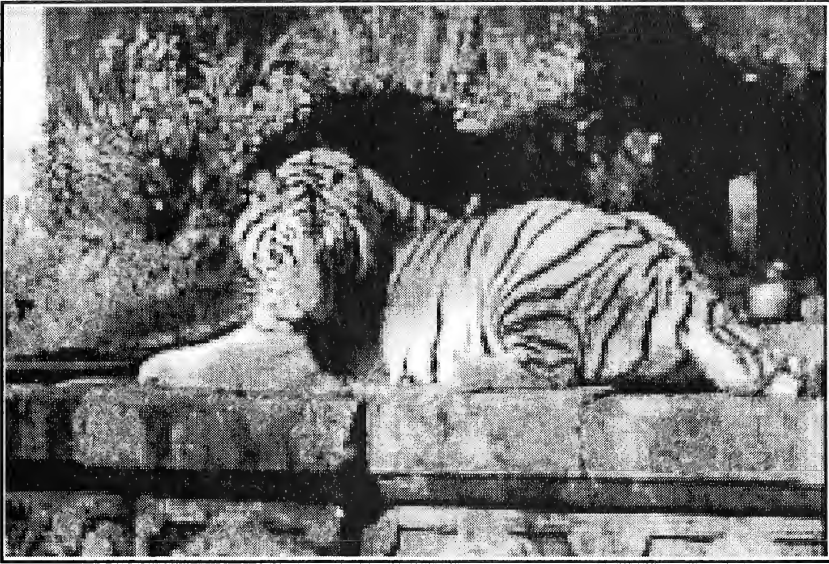
All of the training efforts paid off last spring. One of our tigers, Rainbow(four years old) became lethargic and eventually uninterested in food. The veterinary team wanted to obtain blood samples. The keepers had to be very creative in motivating Rainbow to get into the correct position and hold for the blood draw. Since food was of little interest to Rainbow, a Boomer Ball® and one of her favorite scents (a perfume) were used to reward her movements into the blood draw body position. Once Rainbow was in the correct position, four small pieces of cowhide were used to gain Rainbow's interest by allowing her to sniff them. Once Rainbow was interested in the hide, the small pieces were fed to keep her steady for the blood draw. While she was in the position, a rectal temperature and a rectal culture were also obtained.

Due to her lack of appetite and low energy level, Rainbow was immobilized for a more detailed physical exam. The day after her immobilization, the veterinary team staff wanted to administer fluids for hydration. Rainbow was still not acting normally and she had never seen an IV bag. Fortunately, Rainbow by this time had regained her appetite. Rainbow entered the crate and moved into the blood draw position where she remained steady while receiving food rewards. Three liters (3.2 qts.) of lactated ringers and vitamin B were administered subcutaneously in the area across her back. Rainbow did get up several times during the one-hour process, but she always responded to the cues from the keeper and returned to the position until all of the fluids were dispensed. The next day our goal was to administer another three liters of fluids into Rainbow. Our second attempt was even better than the first try. Rainbow stayed in the correct position for the entire process again, taking about one hour. Rainbow was so relaxed after eating most of her diet, she starting self grooming and napping in the crate as the fluids were dispensed. The fact that Rainbow participated in all of the training even though we added several novel procedures and new supplies was incredible. Rainbow was recently immobilized using a hand injection of the immobilization drugs.

### **Conclusion**

Having a proactive training plan in place and behaviors trained before they were medically necessary really paid off. All tigers at DAK have become very comfortable with these medical behaviors and the training routine, making them more likely to participate when really necessary. Currently, the team is working on obtaining an ultrasound in the crate. Of course the future possibilities are endless.





Four-year-old 0.1 tiger Rainbow at Disney's Animal Kingdom.

#### **Acknowledgments**

A special thanks to all of the current primary tiger trainers: Angela Cecil-Binney, Jennifer Hylton and Lois Johannes for all of their contributions to the husbandry training program. Marty MacPhee, Curator of Behavior Husbandry; Gary Noble, Zoological Manager; and Deidre Fontenot, DVM have been invaluable in their support and expert advice in reference to the tiger training program. Without the close working relationship with Lidia Castro, Veterinary Technician, the training program would not have been as successful as it has been.

**All photos provided by the author.**

#### **References**

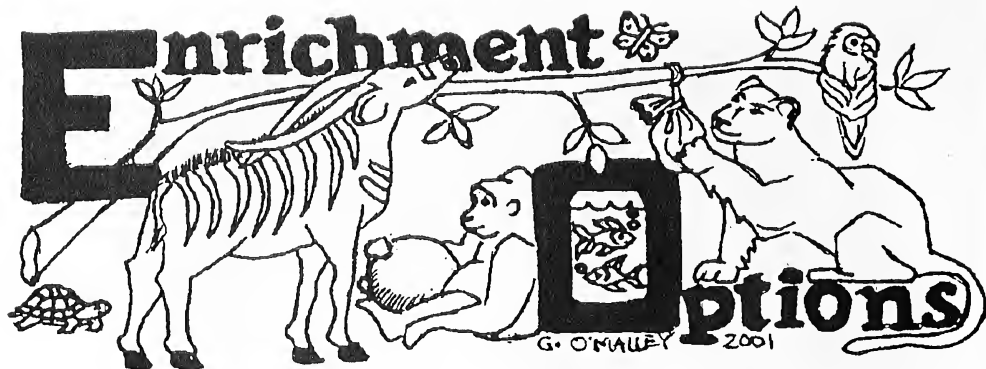
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- Hylton, J. Husbandry Training for Large Felids at Disney's Animal Kingdom. FELID TAG PROCEEDINGS, 2001.

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## **Emergency Plan for World's Most Endangered Cat**

Spain has embarked on an "emergency breeding plan to prevent the Iberian lynx from becoming the first feline species to become extinct since prehistoric times" says a Reuters news report issued in early June. Recent surveys have found that only "150 to 200 survive" in the grasslands of Spain and Portugal with only two populations large enough to be sustainable. Spain's plan to save the lynx includes measures to protect habitat and "foster the rabbit population" which is the lynx's primary food source.

---GREENlines Issue#1642 6/7/02



*By Jan Roletto, Arcata, CA  
and Dawn Neptune, Utah's Hogle Zoo*

This month, the column will be saying goodbye to Kayla Grams, one of the co-founders of the Enrichment Options Column. Although her involvement with AAZK will continue, she has decided to pursue other ventures. We thank her for all her work in paving the path of enrichment!

We would also like to introduce Dawn Neptune, our new co-editor for the column. Dawn is a member of AAZK's Enrichment Committee, as well as co-coordinator of Utah's Hogle Zoo's Training and Enrichment program.

## **PVC "Our Friend" - Good Ideas Continued**

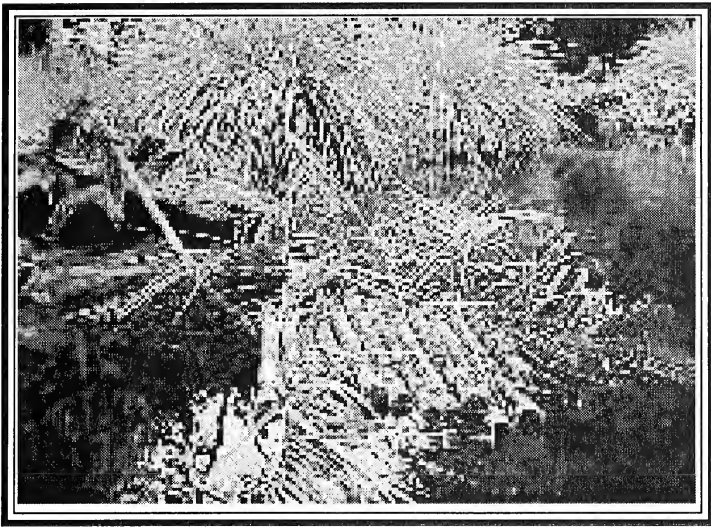
*By Tina Fridman, Animal Keeper  
Disney's Animal Kingdom  
Lake Buena Vista, FL*

### **OTTER RAFT**

For enrichment, we devised a floating raft for our 2.0 Asian small clawed otters. This was easily done by using 15 one-half inch pieces of PVC. We used the following steps to construct the raft:

- 1) Each pipe was 3 feet in length and we glued a cap to each end of the pipe.
- 2) Next, each piece was scuffed and torched to appear natural
- 3) Each piece was tied together with an all-natural string. The string was placed over one piece of PVC, then under the piece next to it. This process was repeated several times so it was secure. Each pipe was tied to the piece next to it, at the top and bottom.
- 4) The raft was put in the water and palm fronds were added to give it a more natural appearance. The raft was anchored with a rope tied to a tree stump on land. The rope that was used to anchor the raft was put through another piece of PVC (4 feet in length). This was done not only to hide the rope, but also to prevent the otters or fish from becoming entangled in the rope. The raft was placed in front of an underwater viewing window, so it would increase visibility of the otters for our guests. Lettuce was attached below the raft between pipes to enrich the fish that share the habitat with the otters. Not only did it give the otters another resting spot in their habitat, but it was a cool spot during the hot months.



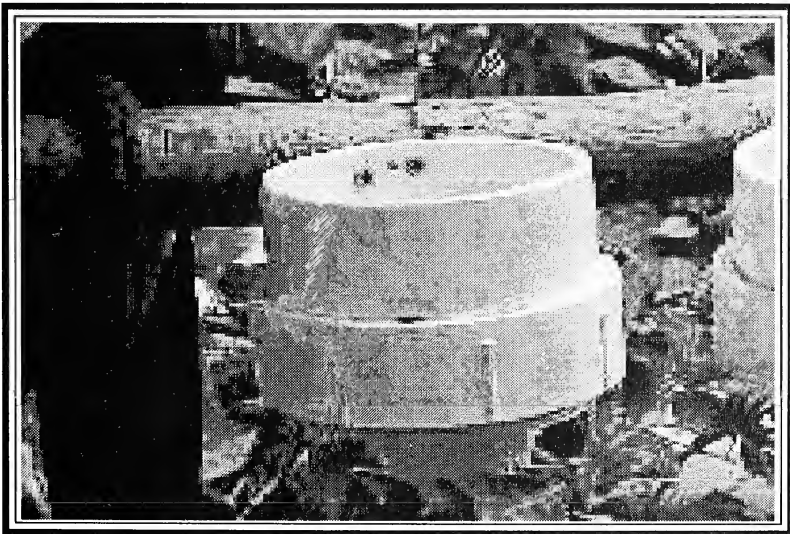


**Otter Raft**

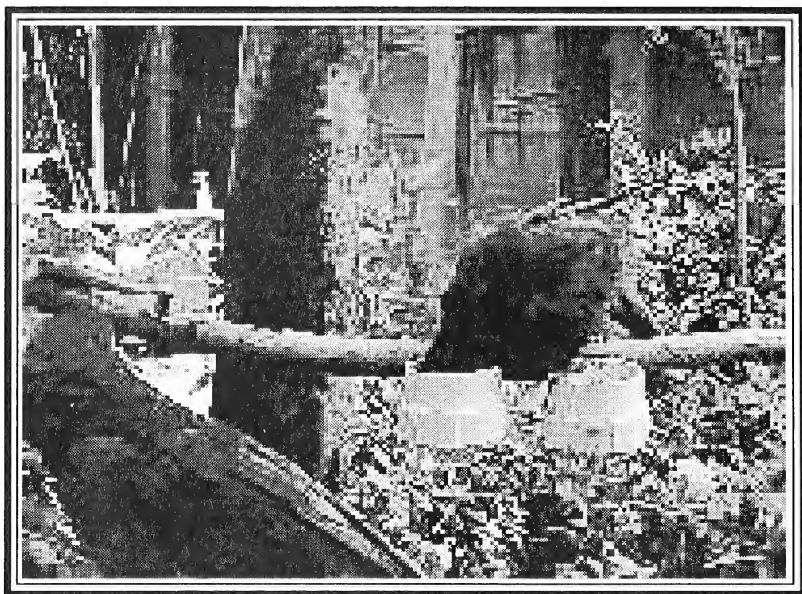
## **PARROT BOWLS**

Another husbandry challenge involved our parrots throwing or destroying their food and water bowls used off-exhibit. Once again we conquered that challenge with PVC.

Four-inch PVC female adapters and their caps were used. We screwed a small part of the pipe into a perch to make it permanent. The cap screws into the bottom part, which makes a food bowl. Removing the cap and washing the pipe with a scrub brush easily cleans the feeders. These worked so well we decided to try some on exhibit. They were scuffed and torched to look natural. The parrots have no problems retrieving food from them, and they can't be thrown because they are attached to perches. To hold water, we added some silver bowls that fit snugly inside the pipe, making it difficult for the parrots to remove the bowls. With a safe sealant, the caps can be permanently attached, creating a permanent water bowl.



**Parrot Bowls are used for both food and for water**

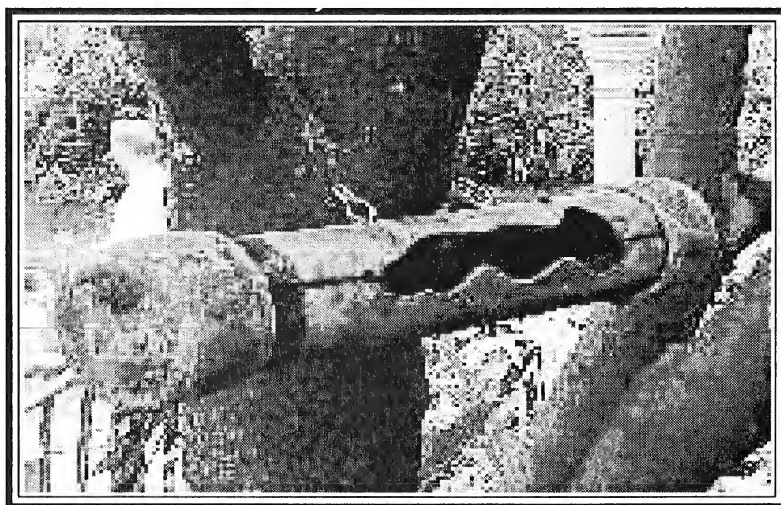


**Parrots utilizing PVC feeder bowls at Disney's Animal Kingdom**

### **COTTON TOP TAMARIN GRACKLE-PROOF FEEDER**

Grackles needed to be kept from eating out of our cotton top tamarin's plastic food cups. We used a one-inch piece of pipe and put a cap on each end. A feeding slot was then cut out with a jigsaw to allow easy access for the tamarins to retrieve food. The grackles have nothing to grasp for perching and are unable to retrieve the food.

The pipes were scuffed and torched to appear naturalistic for the exhibit. They are easily attached to a tree by putting eyehooks in the tree, and small hooks in the feeder itself. They have worked effectively as well as being somewhat enriching for the tamarins.



**Unique design allows tamarins to feed, but not raiding grackles**

*(Ideas appearing in this column have not necessarily been tested by the editors for safety considerations. Always think ahead and use good judgement when trying new ideas. You are invited to submit materials for the Enrichment Options Column. This might include recipes, toys, puzzle feeders, olfactory enrichment ideas, etc. Drawings and photos of enrichment are encouraged. Send to: AKF/Enrichment, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614-2054. Eds.)*

**Visit the AAZK Enrichment Website - [www.enrich.org/aazk](http://www.enrich.org/aazk) or to join the Enrichment Listserve, email [jackbell@humboldt1.com](mailto:jackbell@humboldt1.com)**

**An archive of past postings may be viewed at [www.cava.org/enrich](http://www.cava.org/enrich)**

## Condor Chicks Hatch in Wild - At Last !

For the first time in 18 years, a pair of California condors have laid, brooded and hatched an egg in the wild. This first chick was hatched on 11 April. This was followed 14 May by the hatching of a second chick in the Hopper Mountain National Wildlife Refuge. The hatching of a third and fourth chick in early April in the Sespe Condor Sanctuary was great news for the recovery program and for biologists who have worked for nearly two decades to keep the condor from ending up on an extinct species list.

There have been a few bumps in the road for these fledglings including the first chick being contaminated by oil brought in on his father's feathers during a feeding bout. As of this writing all four chicks were doing well and being reared by their parents. However, chicks are especially vulnerable in the first few weeks, and it will take six months before the babies will be fully feathered and ready to fly. With that in mind, wildlife officials are tempering their excitement with caution.

"I will keep my fingers crossed until it takes its first flight," said Michael Barth, a biologist at the Hopper Mountain National Wildlife Refuge near Fillmore, which supervises condor recovery efforts in Southern California. "[But] a lot of people doubted whether the birds could get to this point, and here they are."

In 1982, scientists began gathering condor eggs from the wild. The last egg hatched in the wild was in 1984, and the \$35-million condor captive breeding program began the following year. Facing extinction, condors were taken in from the wild, bred in captivity and, starting in 1992, released again, along with their young. Since then, scientists have been waiting for the younger birds to become sexually mature and begin laying eggs.



Artist: Mary Deckert

The condor population is slowly recovering, however. There are 63 condors living in the wild in California and Arizona, 18 in field pens awaiting release and 104 in captivity. Most of the wild birds, which have 9-foot wingspans and weigh about 20 pounds, live in sanctuaries in Big Sur, Los Padres National Forest and the Grand Canyon. The recovery program hopes to develop a population of condors in California and Arizona with 150 birds each, including 15 breeding pairs. Sources: GREENlines Issue #1627 5/16/02; GREENlines Issue#1639 6/4/02; Los Angeles Times 4/16/02

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 10th of each month to: Opportunity Knocks/AKF, 3601 SW 29th St., Suite 133, Topeka, KS 66614-2054. Please include closing date for positions available, and when setting these dates keep in mind that because of bulk-mail, most readers do not receive their AKF until the middle of the month or later. There is no charge for this service and fax or e-mail listings of positions which become available close to deadline are accepted. Our Fax is (785) 273-1980; e-mail: [akfeditor@zk.kscoxmail.com](mailto:akfeditor@zk.kscoxmail.com)< We are no longer located at the Topeka Zoo, so please note new address to avoid delays in processing.*

**Bird Keeper...**Parrot Sanctuary seeks professional bird keeper for collection of 90 birds. Maui Animal Rescue and Sanctuary (MARS) is a privately funded 501(c)(3) dedicated to education and quality care for parrots and house rabbits. We are committed to developing and maintaining a standard of care that will provide for long-term health and happiness. Most of our birds are housed in large outdoor, stainless steel aviaries. They are maintained on an organic formulated diet and fresh foods. We are looking for someone with extensive bird handling skills. Experience managing a large collection of birds is essential. Responsibilities would include supervising a staff of 3-4 workers and providing for the daily care of the birds. Excellent people skills are required. Duties will include scheduling and developing an effective team. Daily maintenance tasks are demanding and require a strong, fit individual. We are looking for a self-motivated individual who will act as a liaison between our avian veterinarian and our staff. Salary is negotiable based on experience. On-site housing may be possible. Benefits include insurance, vacation and holidays. Fax resume to (408) 255-1739.

**Chimpanzee Caregiver...**The Primate Foundation of Arizona is currently accepting applications for the position of Chimpanzee Caregiver. Requires two (2) years of college-level course work and two (2) years experience in the care of exotic animals. An equivalent combination of education and experience which provides the required knowledge, skills, and ability will be considered. Primate experience a plus. The position does require heavy lifting, an applicant must be able to lift and carry objects weighing up to 60 pounds. Caregivers assist in the responsibility of caring for approximately 75 chimpanzees (*Pan troglodytes*). Must be willing to work weekends and holidays, and make at least a two-year commitment. Excellent benefits. E.O.E. Applicant must have a negative TB skin test and evidence of a measles booster or natural disease prior to employment. Send letter of interest (with requested salary), resumé and three (3) letters of reference to: Jim Murphy, Colony Manager, Primate Foundation of Arizona, P.O. Box 20027, Mesa, AZ 85277-0027. **Position open until filled.**

**Animal Handler** (Feld Entertainment - Ringling Bros. and Barnum & Bailey)...If working with animals appeals to you, we have a great opportunity. Ringling Bros. and Barnum & Bailey® Circus has immediate openings for animal handlers who aren't afraid to work hard caring for our animals. Responsibilities include total animal care such as grooming, feeding, cleaning and exercising animals. You must be able to work flexible hours and must be able to lift/move up to 75 lbs. Prior experience working with large animals is strongly preferred. Opportunities with Ringling Bros. and Barnum & Bailey® Circus require 100% travel throughout North America. We offer a competitive salary and benefits.

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*Positions posted with AAZK, Inc. may also be found on  
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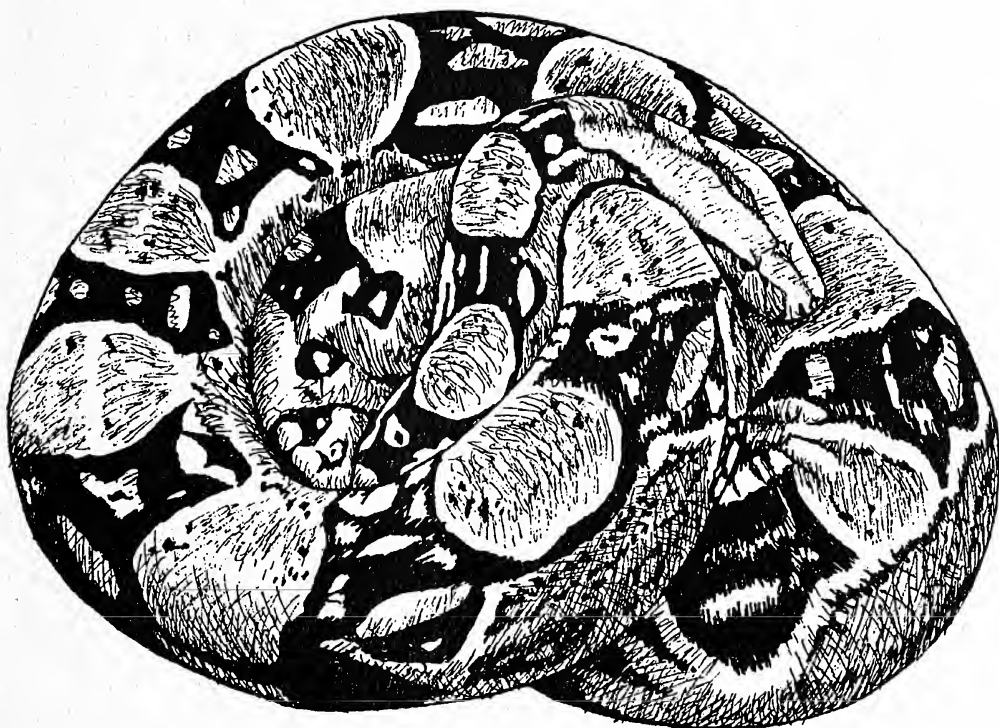
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*DAN ANDREGE*

The Journal of the American  
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**AUGUST 2002**

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## About the Cover.....

This month's cover features a *Boa Constrictor* (*Boa constrictor*) drawn by Dan Alldredge, a former keeper of six years, and now a grounds maintenance technician at Mesker Park Zoo & Botanic Garden in Evansville, IN. This snake is often seen in the pet trade and in zoo outreach programs due to its unusually easy managability, temperment and 6-12 foot size. It's a tree dweller whose diet in the wild consists of small mammals, birds, and lizards; in captivity it feeds mostly on rats. It sports cream/tan and black saddle patterns with some russet coloring towards the tail. Unlike most snakes that lay eggs, the *Boa Constrictor* bears live young numbering from eight to 60. Its habitat ranges from desert fringes to wet forests in Argentina to southern Mexico. Lifespan may reach 30 years. Thanks, Dan!

*Animal Keepers' Forum* publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Authors are encouraged to submit their manuscripts on a disk as well as in hard copy form. Manuscripts submitted either on disk or electronically as attachments to an email should be submitted in Microsoft WORD. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5"** (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy black and white or color prints (minimum size 3" x 5" [8cm x 14cm] ) are accepted. Clearly marked captions should accompany photos. Please list photo credit on back of photo. Photographs may be submitted electronically as either JPEG or TIFF file attachments.

Articles sent to *Animal Keepers' Forum* will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for *AKF*. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone, fax or email contributions of late-breaking news or last-minute insertions are accepted as space allows. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (785) 273-1980; email is [akfeditor@zk.kscoxmail.com](mailto:akfeditor@zk.kscoxmail.com)

**Deadline for each regular issue is the 10th of the preceding month.**

**Dedicated issues may have separate deadline dates and will be noted by the editor.**

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# ***Scoops & Scuttlebutt***



## **Wolf Awareness Week Planned for October 2002**

October 13 - 19 marks National Wolf Awareness Week. This week is an important vehicle for dispelling misconceptions about wolves and educating the public about the role predators play in maintaining biological diversity. The wolf is a striking symbol of wild nature, yet they have long been shrouded in myth and superstition. In the early 1900's this keystone species was methodically exterminated from nearly all of its historic range.

Wolf Awareness Week encourages conservation efforts not only for wolves, but for all wild species. Many zoos around the country hold special educational events during this week. We encourage zoos to hold special keeper talks, contests, provide tours and craft-making stations, and to sponsor other wolf-related events. Defenders of Wildlife can provide you with fact sheets, posters, flyers for children and a limited number of give-away items to help with your programs. If your zoo is interested in participating in Wolf Awareness Week, please contact us so that we can promote your event on our web site devoted to Wolf Awareness Week 2002 - [www.defenders.org/waw](http://www.defenders.org/waw). Please contact Yvonne Borresen at 202-682-9400, ext. 292 or [yborresen@defenders.org](mailto:yborresen@defenders.org) if you have any questions or would like to participate in Wolf Awareness Week.

Stay up-to-date on wolf issues by signing up for Wolfines, Defenders of Wildlife's free electronic newsletter offering information for wolf conservationists about efforts to protect wolves. Send an e-mail to [wolfinesrequest@defenders.org](mailto:wolfinesrequest@defenders.org), leave the e-mail subject line blank and type "Subscribe Wolfines" in the message body.

## **Dallas Zoo Seeks Research Participants**

The Dallas Zoo is seeking participants to assist with a research project in Mexico. We will be capturing and radio-tracking ocelots and jaguarundis and will be capturing and banding birds of prey. Participants will be taught the necessary skills required. The trip date is 29 September-11 October 2002. Cost is \$1700.00 and includes lodging, meals and transportation from Harlingen, TX and the study site. For information, contact Wanda Weaver (214) 670-6833.

## **KC Conference to Include Australasian Workshop**

We will be having the Australasian Workshop again this year at the conference. We will be discussing AZA updates, field research, publications and new macropod case histories to name a few. If you have topics for discussion please contact: Jacque Blessington at (816) 513-5700 ext. 25703 or email at [Jacsprat65@aol.com](mailto:Jacsprat65@aol.com)

## **Please Note New Email Addresses for AAZK Administrative Office/AKF**

Members are asked to note that there are new email addresses for both the AAZK Administrative Offices and for *Animal Keepers' Forum*. These changes became necessary when our cable service switched from Roadrunner to their own network.

The address for Barbara Manspeaker at AAZK Administrative Offices is:  
[aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com)

The address for Susan Chan and *Animal Keepers' Forum* is:  
[akfeditor@zk.kscoxmail.com](mailto:akfeditor@zk.kscoxmail.com)

**>>Please begin using these new addresses immediately<<**

## Proposed By-Laws Changes Notification

During the year 2001-2002, the Board of Directors and the By-Laws Committee reviewed the National by-laws to determine if there were any changes that needed to be made and voted on. These are the areas found that needed changes. Please review and be prepared to vote on these changes during the General Meeting at the National AAZK Conference in Kansas City, MO from 6-10 October 2002.

Article I (Offices), Section 1 (Principle Office), sentence 1, currently states "The Principle Office for the transaction of business of the Association is hereby located at 635 S.W. Gage Blvd., Topeka, KS 66606-2066." The sentence should now state: "The Principle Office for the transaction of business of the Association is hereby located at 3601 S.W. 29th St., Suite 133, Topeka, KS 66614-2054."

Article II (Officers and Board of Directors), Section 1 (Board of Directors), sentences 3 and 4, currently states "The Immediate Past President shall serve as *ex-officio* member of the Board without the right to vote and shall serve as the Secretary to the Board of Directors. The President of the Association shall be elected by Executive Committee appointed by the Board of Directors in a policy detailed in the Operations Manual of the Association." Those sentences shall now read: "The Immediate Past President shall serve as *ex-officio* member of the Board without the right to vote. The President and Vice President of the Association shall be elected by Executive Committee appointed by the Board of Directors in a policy detailed in the Operations Manual of the Association."

Article VI (Committees, Coordinators, and Advisors), Section 2 (Standing Committees), sub-section "Ethics", sentence 2, currently states "Appointments to the Committee shall occur every two(2) years and are made by the Board of Directors." That sentence should now read: "Appointments to the Committee are made by the Board of Directors."

--Submitted by Gisela Wiggins, By-Laws Committee Chair  
The North Carolina Zoo, Asheboro, NC

### *In Memorium*

In early June friends and colleagues of Alice Lorraine Gilley gathered at Miami Metrozoo Amphitheater for a memorial service for the 46-year-old zoo keeper who died May 27, 2002 of a brain aneurysm. Alice had worked at Miami Metrozoo for 22 years. She was a graduate of the first class of Santa Fe Teaching Zoo and began at Metrozoo even before it opened to the public. She began as a keeper and over the years was promoted from Senior Keeper to Zoological Supervisor. She worked in the Asian Lobe of the zoo. Her passion was Tree Kangaroos and she had been involved in the AZA's Tree Kangaroo Species Survival Plan since its inception and served as a Steering Committee member of the AZA's Marsupial and Monotreme Taxon Advisory Group. Alice first got Miami Metrozoo involved in the Tree Kangaroo Conservation Project and was tireless in her support and enthusiasm for its efforts.

Donations will be accepted in the name of Alice L. Gilley for disbursement through the Metrozoo Conservation Fund to Tree Kangaroo conservation projects. Please make checks payable to Metrozoo Conservation Fund and mail to the attention of Eric Stephens, Director, Miami Metrozoo, 12400 SW 152nd St., Miami, FL 33177-1499.

AAZK extends its condolences to Alice's family and her colleagues throughout the zoo community.

# From the President.....

Greetings from the cubicle of the president. It's that time of year again when we start planning for the fall conferences. Which should I attend? What topic will my paper address? Who can I room with? And how do I pay for it? If you're in Kansas City, you're probably just praying. Relax, everyone gets that way and then pulls off a great conference. I am sure this year will be no exception.

I remember my first conference. It was 1993 in Atlanta. I know some of you are saying "Wow, that was a long time ago." A few others are laughing at me as the "new guy." But it was an experience that changed me. It solidified my belief in this organization and the career that I still enjoy. The contacts and friends I made that week have continued with me since then.

I think we sometimes take conferences for granted. Someone may ask if we will be going this year. We answer that "Yes, of course I'm going." But think about what we are able to do as a matter of fact is a tremendous luxury for other keepers around the globe. Make the most of that luxury. Do whatever you can to get there and once there, make the most of every minute. It is over way too quickly for me. I get just enough time to reaffirm the friendships and we have to say goodbye. It's enough to maintain the ties though.

The information we gather helps us to better care for the animals in our collections. We get answers to our questions both in papers and in individual conversations. Many times we leave with more questions than answers, but those questions lead us to a better understanding. I can't tell you how many times a challenge has come up and remembered someone at a conference talking about the same thing. A quick phone call and we have a solution.

I truly look forward to seeing all of you at this year's AAZK conference. Please stop me and take the time to say hello. Let me know what it is that you would like from this organization and what you can offer to it. See you in Kansas City!



Kevin R. Shelton, AAZK President  
The Florida Aquarium, Tampa, FL



## BRANCHING OUT



## 2002 JOINT NATIONAL CONFERENCE OF THE AMERICAN ASSOCIATION OF ZOO KEEPERS and ASSOCIATION OF ZOOLOGICAL HORTICULTURE

KANSAS CITY, MO  
OCTOBER 6-10, 2002

### COUNTDOWN TO CONFERENCE

- Don't forget that the deadline for conference registration is 23 August 2002!! The deadline for hotel reservations is 3 September 2002. Registration forms may be found in the March and July 2002 issue of the *Animal Keepers' Forum*. Forms may also be downloaded off the website.
- We received over 30 abstracts for papers, posters and workshops. A wide variety of topics will be covered, some of the familiar themes along with some new ideas. A program schedule will be printed in the next *AKF* and on the website.
- Don't forget that papers are due by 6 September 2002. Information will be mailed to each presenter.
- In case you haven't seen it, the website is: [WWW.AAZKAZH2002.ORG](http://WWW.AAZKAZH2002.ORG).
- You can also reach us at our email address: [AAZKAZH2002@AOL.COM](mailto:AAZKAZH2002@AOL.COM)
- How to dress for success.....bring something of everything (or at least watch The Weather Channel). We have been known to have 80° Indian summers in October. Oh yeah, we have also been known to have ice storms and snow.
- Living in Kansas City puts you right in the middle of the U.S. (technically its somewhere near in Kansas). Within four hours there are many zoos and native habitats to see. In Kansas City there are various shops, museums, and historic sites. These are just a few extra things to do while you are here.
- Secure your exhibit space by contacting Jacque Blessington at the above email address or by phone at (816)-513-5700 ext. 25703.
- Sponsors are an integral part of making a conference the best it can be (the more money there is the more free food and beer you get). You too can be a part of this wonderful opportunity, just contact Jacque Blessington again at the above email or the same phone number as before.
- As of 6 July there are only 92 days left til conference. 92 bottles of beer on the wall.....

# Coming Events

**Association of Avian Veterinarians 23rd Annual Conference & Expo** - 26-30 August 2002 in Monterey, CA. Will include special behavior program, paper sessions and hands-on labs. To view the entire program and register on the web, visit [www.ConferenceOffice.com/AAV](http://www.ConferenceOffice.com/AAV). To contact the AAV Conference Office: email [AAV@ConferenceOffice.com](mailto:AAV@ConferenceOffice.com); phone - (303) 756-8380 ext. 12; fax - (303) 759-8861.

**AFSA (French Speaking Association of Keepers) National Conference** - 7-8 September 2002 at the Mulhouse Zoological and Botanical Park. For further information please contact: Mickael Michault, AFSA Keeper Liaison; email - [mickael.branfere@wanadoo.fr](mailto:mickael.branfere@wanadoo.fr)

**Elephant Managers Association 2002 Conference** - 29 September to 2 October 2002. Hosted by Cleveland Metroparks Zoo, Cleveland, OH. For more information call (216) 661-6500 ext. 4445 or email [Mkelleysharp@MSN.com](mailto:Mkelleysharp@MSN.com)

**Association of Zoo Veterinary Technicians 22nd Annual Conference** - 1-6 October 2002 in Milwaukee, WI. Meeting topics include microbiology wetlab, zoo animal dentistry, lab techniques and procedures specific to exotic species, and case studies of traditional zoo and aquatic animals. Will include pre-conference tour to International Crane Foundation. For more information contact: Margaret Michaels of the Milwaukee Zoo at (414) 256-5441; fax (414) 256-2522 or email at [MMICH@execpc.com](mailto:MMICH@execpc.com) or check out the website at [www.azvt.org/](http://www.azvt.org/)

**American Association of Zoo Veterinarians** - 6-10 October 2002 in Milwaukee, WI. Program sessions include Reptiles and Amphibians, Avian Medicine, Hoofstock, Carnivores, Primates, Case Reports, Aquatic Animals, Pathology, Conservation Medicine, Emerging Diseases, Reproduction and Contraception, Behavior, Enrichment and Conditioning, and Biomaterial Banking. There will also be a poster session, veterinary and graduate student paper competitions, and workshops/wet labs.

For information regarding presentations of papers, please visit our website at [www.aazv.org](http://www.aazv.org) or contact Randy Junge, DVM, St. Louis Zoo, Forest Park, St. Louis, MO 63110; Phone (314) 768-5487; Fax (314) 768-5454; E-mail [rejunge@aol.com](mailto:rejunge@aol.com)

For additional conference information, please contact Wilbur Amand, VMD, Executive Director/AAZV, 6 North Pennell Rd., Media, PA 19063; Phone (610) 892-4812; Fax (610) 892-4813; E-mail [AAZV@aol.com](mailto:AAZV@aol.com)

On Friday, 11 October 2002, The American Veterinary Medical Association will hold its annual Animal Welfare Forum, this year titled "Welfare of Zoo Animals" in conjunction with the AAZV meeting. For more information contact Darci Reagan at the AVMA at 1-800-248-2862 ext 211 or [dreagan@avma.org](mailto:dreagan@avma.org)


**Joint National AAZK/AZH Conference** - 6-10 October 2002 in Kansas City, MO. Conference site is Westin Crown Center. For further information watch for announcements in *AKF* or visit the conference website at [www.aazkazh2002.org](http://www.aazkazh2002.org)

**The Zoo Registrar Association 2002 Conference** 10-12 Oct 2002 - in Wichita, Kansas, U.S.A. and hosted by Sedgwick County Zoo. Hotel will be the Wichita Marriott Hotel, reservations Number: (800) 610-0673 (available 8:00-5:30 Central time, Mon-Fri.). For more information contact Conference Chairperson Aletha Kinser, Sedgwick County Zoo, [registrar@scz.org](mailto:registrar@scz.org) (316) 942-2213 ext. 203, Program Chair Paul Louderback, Tulsa Zoo and Living Museum, [Plouderback@ci.tulsa.ok.us](mailto:Plouderback@ci.tulsa.ok.us) (918) 669-6225 or visit the ZRA website: <http://www.zra.homestead.com/> This is an excellent chance to meet and network with other zoo registrars. The program will be records, permitting and animal shipping oriented. There should be an ISIS representative present.

**The Ninth North American Crane Workshop** - 21 to 25 January 2003 in Sacramento, CA. Plans for the workshop include an ice-breaker on Tuesday evening, technical sessions on Wednesday and Friday, and an all-day field trip on Thursday, with an awards banquet on Friday evening. For more information contact Tom Hoffmann, NACWG Treasurer, at [Thoffmann@hoffmanns.com](mailto:Thoffmann@hoffmanns.com)

**First International Conference on Zookeeping in 2003** - The Netherlands - Will be held between 2-10 October at Birdpark Avifauna. For further information please visit: <http://es.geocities.com/jxarles20>

**NOTICE:** The International Serow Summit/the 2nd Symposium on Capricornis and Related Species, originally planned for 2002 by the Japan Serow Center has been delayed until the Fall of 2004. Details will be published as they become available.



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# **AAZK Announces New Members**

## **New Professional Members**

Sandra Roberts, **Lupa Zoo (MA)**; Erin Rosebrock, **Queen's Wildlife Center (NY)**; Teresa Snyder, **Brookgreen Gardens (SC)**; Becky Ellis, **Disney's Animal Kingdom (FL)**; Amy A. Neill, **Miami Matrozoo (FL)**; Mark D. McDonough, **Palm Beach Zoo at Dreher Park (FL)**; John L. Stokes, **American Eagle Foundation (TN)**; Melissa Smith, **Cincinnati Zoo & Botanical Garden (OH)**; Edythe Sonntag, **Detroit Zoo (MI)**; Marisa Paulat, **Como Zoo (MN)**; Melissa Friedlund, **Lincoln Park Zoo (IL)**; Tammy Schmidt and Dawn E. Boyer, **St. Louis Zoological Park (MO)**; Erik Scheidegger, **American National Fish & Wildlife Museum (MO)**; Shannon Munoz, **Heritage Park Zoo (AZ)**; Jennifer Kuypers, **The Animal Guys (CA)**; John Hawk Meitz and Bradley K. Wymer, **San Diego Zoo (CA)**; Verena Moll, **Turpentine Creek Wildlife Refuge (AR)**; Mike Owyang, **Six Flags Marine World (CA)**; Molly Fisher, **Wildlife Safari (OR)**; and Carolyn Austin, **Woodland Park Zoo (WA)**.

## **Renewing Contributing Members**

Joan Diebold, Keeper  
Franklin Park Zoo, Boston, MA

Vernon N. Kisling, Jr.  
High Springs, FL

## **SARA Passes House of Commons**

Canada's first ever legislation to protect endangered plants and animals, the Species at Risk Act, took a major step forward when it "passed the House of Commons after more than a decade of effort and two failed bills" reports the *Toronto Globe and Mail*. If the law passes the Senate and receives royal approval it would "protect up to 233 species considered endangered," most of which range into the U.S., as well as prevent "destruction of their critical habitat" on federal lands. Conservationists offered "qualified" praise for the bill because the legislation "does not mandate protection outside of federal lands, northern territories and native reserves," except for endangered aquatic species.

## **Owl Recovery Multifaceted**

The Mexican spotted owl's 1995 recovery plan has led to the "serendipitous conservation of two other imperiled species: the Gooding's onion and the Jemez Mountain salamander, both of which might have required listing under the ESA were it not for the actions recommended by the recovery plan" reports the Environmental News Service. Because the recovery goals focus on an "ecosystem approach" where habitat protection is applied on a landscape scale, other species that depend on similar habitat types also benefit from the conservation efforts.

## **New Initiative Targets Imperiled Butterflies**

The Butterfly Conservation Initiative is a new program "designed to bring together non-governmental organizations and government agencies to aid the recovery of imperiled butterflies in North America" says the American Zoo and Aquarium Association (AZA). The cooperative effort includes AZA, the USFWS, NWF, the Xerces Society and 35 zoos and aquariums and focuses on recovering the 22 Endangered Species Act-listed butterfly species as well as keeping the many other threatened butterfly species from further declines.

*Source: GREENlines Issue#1646 6/14/02*



# ABC's

## ABC's: Animal Behavior Concerns and Solutions

*A Question & Answer Forum for Animal Professionals*

©2002 by Diana Guerrero, Independent Behavior Consultant  
Ark Animals of California, Big Bear Lake, CA



### Question(s)

Do wild animals become quite "tame" under the right circumstances and with proper training and care?

### Answer

The level of rapport between man and animal depends upon many factors. A few of the influencing variables include: genetics, temperament, inherited predispositions, environment, captive history, training experiences, socialization, individual preferences, and aptitude of the humans involved with the animal.

Wild animals can be trained and desensitized but I don't believe that they are truly tame in the manner that the average person hopes. "Tame" refers to making an animal tractable and useful to humans or moving it from a wild to a domestic state. Selective breeding has been successful in domesticating animals over thousands of years, but a wild animal is still a wild creature even when it is born in captivity.

So, the hardwiring remains the same, but you can teach (train) an animal to adapt and be amiable to working with man. Captive wild animals respond well to training (and those that are born in captivity differ from their wild counterparts), but are a far cry from a domesticated creature.

### Question(s)

Do wild animals respond to positive reinforcement in the same way domestic animals do?

### Answer

All creatures respond to positive reinforcement in a similar manner. Distinct breeds or species have different aptitudes for learning, but the limitation is generally rooted in the skill of the trainer or handler.

### Question(s)

What should positive reinforcement primarily be? Food? Attention? Praise? Access to a favorite toy? Playing a game?

### Answer

A positive reinforcer is a stimulus whose presentation increases the probability of response. I believe this question is, *what type of reinforcement would be best used as a primary reinforcer?*

The preferred primary reinforcer of most trainers is food. However, in some animals food is not a good motivator and attention, play, access to a preferred area or animal, and other stimuli take precedence.

Variety in the choice of primary reinforcement is a tool that will enhance the training experience for your animal. By presenting different reinforcement options you should be able to determine what your specific charge prefers.

So, the primary reinforcement will vary depending on what the animal best responds to and sometimes even seasonal influences (like rut) will change it.

About the Columnist: Since 1978 Diana Guerrero has worked professionally with both wild and domestic animals. She has been affiliated with and certified by a variety of animal programs in the USA and Europe. She currently writes, consults and leads safaris. Information and enrollment for her safaris, seminars, training courses and animal career programs can be found at her website: <http://www.arkanimals.com>. Publications and other training support items may also be purchased at the site. Questions for ABC's should be submitted to Diana directly via email: [arkabc@arkanimals.com](mailto:arkabc@arkanimals.com), through the ABC'S questionnaire on her website, or via regular mail: c/o ARKANIMALS.COM, P.O. Box 1989-215, Big Bear Lake, CA 92315 USA.

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## **REMINDER**

### **Three Types of Data Transfer Forms Available from AAZK**

Just a reminder that three different types of data transfer forms are available to requesting institutions from AAZK at no charge. These forms are designed to be used whenever an animal is shipped from one facility to another so that important information on that animal can be passed on to the receiving keeper and veterinary staffs.

The following forms are available by contacting Barbara Manspeaker at 1-800-242-4519 (U.S.) and 1-800-468-1966 (Canada), or by emailing your request to [aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com)<

- **Animal Data Transfer Form (ADTForm)** - includes information on diet, reproductive history, general medical history/physical conditions, and enclosure/maintenance data on animal(s) being shipped.
- **Enrichment Data Transfer Form (EDTForm)** - includes information on behavioral history, enrichment currently used and how implemented (food, exhibit, artificial, etc.), safety concerns for animal(s) being shipped.
- **Operant Conditioning Data Transfer Form (OCDTForm)** - includes general background information, training specifications, training schedule, behaviors trained and methods used for animal(s) being shipped.

These forms are provided free of charge as a professional courtesy of AAZK, Inc. We encourage all zoos, aquaria and other animal care facilities to adopt the use of these forms when shipping animals. We extend our thanks to the following institutions for assisting in the printing expenses for these forms: Columbus Zoo (ADTForm), Arizona-Sonora Desert Museum (EDTForm), and Disney's Animal Kingdom (OCDTForm).

**American Association of Zoo Keepers, Inc.**  
**Administrative Office, 3601 SW 29th St., Ste. 133, Topeka, KS 66614-2054**

*The Following Items are Available from the AAZK Administrative Office on a PREPAID basis:*

**PINS AND CHARMS:** Enameled three-quarter inch pins and charms with the official AAZK logo are done in the same colors as the AAZK patch. The charms are suitable for necklaces or French-hook earrings. Price per pin or charm is \$5.00.

**PATCHES:** AAZK Patches are available for \$5.00 each.

**CONFERENCE PROCEEDINGS:** The following issues available at the prices listed.

1980 Montgomery National Conference .....	\$2.00
1983 Philadelphia National Conference .....	\$2.00
1987 Milwaukee National Conference .....	\$3.50
1989 Syracuse National Conference.....	\$5.00
1991 Toledo National Conference.....	\$8.00
80, 83, 87, 89, 91 National Conference Proceedings Package .....	\$15.00
1992 San Diego National Conference.....	\$10.00
1993 Atlanta National Conference .....	\$10.00
1994 Omaha National Conference .....	\$10.00
1995 Denver National Conference .....	\$10.00
1996 Detroit National Conference .....	\$10.00
1997 Houston National Conference .....	\$15.00
1998 Indianapolis National Conference .....	\$15.00
1999 Portland National Conference .....	\$20.00
2000 Columbus National Conference.....	\$20.00
2001 Toronto National Conference.....	\$25.00

Please send the following items(indicate quantity) to:

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State/Province \_\_\_\_\_ Zip/Postal \_\_\_\_\_

PINS \_\_\_\_ CHARMS \_\_\_\_ PATCHES \_\_\_\_

PROCEEDINGS: 1980 \_\_\_\_ 1983 \_\_\_\_ 1987 \_\_\_\_ 1989 \_\_\_\_ 1991 \_\_\_\_ 1992 \_\_\_\_

1993 \_\_\_\_ 1994 \_\_\_\_ 1995 \_\_\_\_ 1996 \_\_\_\_ 1997 \_\_\_\_ 1998 \_\_\_\_ 1999 \_\_\_\_ 2000 \_\_\_\_

2001 \_\_\_\_ CONFERENCE PACKAGE \_\_\_\_

( ) Check enclosed – Make Payable to AAZK

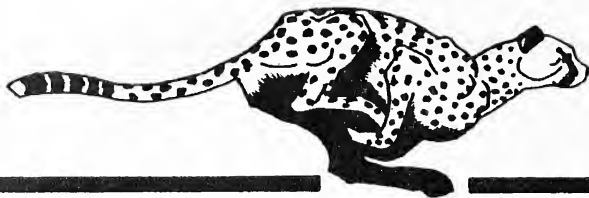
( ) Please charge my credit card as listed below

Mastercard or Visa Number \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Expiration Date \_\_\_\_\_

Name as it appears on Credit Card \_\_\_\_\_  
(Please Print)

Signature \_\_\_\_\_

*Prices given include postage for Domestic Orders Only. Canadian and Overseas orders should check with Administrative Office via email at [aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com) for shipping costs.*



# REACTIONS

*A Question and Answer Forum for the Zoo Professional on Crisis Management*

*By William K. Baker, Jr., Curator  
Little Rock Zoo, Little Rock, AR*

## Question

What do you use for crisis reference material?

## Comments

There really are a limited number of materials in print in regards to crisis management which are applicable to the zoological industry. The best way I can approach this is to provide the material that I started with years ago and then move into material that is more industry specific to our needs. I should mention that much of what historically has been available is related to the African safari hunting genre. While I myself still do hunt, I no longer personally support big game trophy hunting, but do understand its financial value through the permit and fee structure of participating countries. Still, these books provide an invaluable resource of dangerous animal behavior in circumstances that can parallel crisis events. As a result, the years of field experience provided by these authors should not be dismissed.

## General Reference

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Available from: Dr. Patty Boge, 25445 Narbonne Ave., Lomita, CA 90717
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Available from: AAZK, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614-2054, USA.
- Heath, S. E. 1999. Animal Management in Disasters. St. Louis: St. Louis.  
Available from: Mosby, Inc., 11830 Westline Industrial Dr., St. Louis, MO 64146.
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Available from: University of Chicago Press, 1427 East 60th St., Chicago, IL 60637

**Next Month:** How do I decide when it's appropriate to use a net versus a dart gun?

If you would like to submit a question for this column or have comments on previously published materials, please send them to AAZK, Inc., 3601 S.W. 29th St., Suite 133, Topeka, KS 66614-2054  
Attn: Reactions/AKF.

(About the Author: Since 1985 Bill has been active in the fields of science, zoology, and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team Leader, ERT Member, Large Mammal Keeper, Senior Keeper, and Zoo Curator at various zoological facilities. His area of research is crisis management in zoological institutions, which draws upon practical experience and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

# AAZK Book Sale

Sale price is 20% off the Suggested Price  
Previous books may still be available, with some price increases

<u>Sugg.\$</u>	<u>Sale \$</u>	<u>Item Title/Description</u>
\$27.54	\$22.95	<u>Birds of Prey in the American West</u> - Clay Sutton. The author and acclaimed photographer Tom Vezo celebrate these remarkable birds - including several that have been brought back from the brink of extinction. Paperback, 128 pgs.
\$35.00	\$28.00	<u>Insects Revealed, Monsters or Marvels?</u> - Jacques De Tonnancour. Color photographs and text are included in this book with a wide range of insects found throughout the world, especially in the tropics. Hardcover, 160 pgs.
\$39.95	\$31.96	<u>Smithsonian Book of Giant Pandas</u> - Susan Lumpkin & John Seinsticker. Through photographs, natural history and their personal experiences, the authors take steps toward understanding panda history and their relationship with people. Hardcover, 224 pgs.
\$24.95	\$19.96	<u>Coral Reef Fishes: Indo-Pacific and Caribbean Revised Edition</u> - Ewald Lieske & Robert Myers. This handy guide has been expanded to include 44 species that are likely to be observed by anyone visiting the coral reef of the Caribbean, the Indian Ocean and the Pacific to a depth of 60 meters. Paperback, 400 pgs.
\$75.00	\$60.00	<u>Smithsonian Institution - Animal &amp; Encyclopedia of Nature CD-ROM: The Definitive Visual Guide to the World's Wildlife</u> - David Burnie & Don E. Wilson, Eds. This book and CD include information on populations, habitats and conservation methods on almost every species from invertebrates to mammals. Hardcover, 624 pgs. & CR-ROM.
\$39.95	\$31.96	<u>Field Guide to the Wildlife of Costa Rica</u> - Carrol L. Henderson. This book includes nearly 300 species of birds, mammals, reptiles, amphibians, butterflies, moths and other invertebrates. Paperback, 345 pgs.
\$14.00	\$11.20	<u>Tigers in the Snow</u> - Peter Matthiessen. The author powerfully conveys what a loss to "our collective imagination the extinction of these great cats would be." Paperback, 208 pgs.

**To Order:** List the items you are ordering along with your name and complete mailing address. Include a shipping fee of \$3.00 for the first item and \$2.00 for each additional item. Checks payable to: "AAZK Book Sale" (U.S. Funds Only - No Cash or COD's, please). **Outside the continental United States** please call, write, e-mail, or fax your request **before** sending any money; we will help to find the best form of shipment and lowest shipping fees.

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# Legislative Update

Compiled by Georgann Johnston  
Legislative Advisor  
Sacramento, CA



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## Report on Ecological Importance of Geographically Isolated Wetlands Released

The U.S. Fish and Wildlife Service (USFWS) released a report in late June 2002 on the ecology and extent of geographically isolated wetlands of the United States. The report is the first in a planned series of ecological reports, with maps about important types of wetlands.

“People increasingly realize how important geographically isolated wetlands in their areas are to wildlife conservation and a healthy environment,” said Steve Williams, Director of the U.S. Fish and Wildlife Service. “The Prairie Pothole region, known as America’s duck factory, represents only one of many different landscapes nationwide that provide invaluable wildlife habitat in their isolated wetlands. The report we are issuing today provides a solid introduction to the basic ecology and geography of these irreplaceable resources.”

“In desert areas, isolated wetlands provide vital fresh water oases for wildlife and function as stepping stones for migrating birds. Their isolation has promoted the evolution of unique plant and animal life that is specially adapted to these habitats,” Williams explained. “Isolated wetlands are also vital for human well being. Many of them contribute important subsurface water flows to other wetlands and streams. In areas like the Prairie Pothole region, these wetlands also store rainwater, which reduces flooding and recharges groundwater supplies, in addition to providing habitat for wildlife.”

Isolated wetlands, which the report defines are “wetlands with no apparent surface water connection to perennial rivers and streams, estuaries, or the ocean,” have no surface water outlet. Because they are completely surrounded by uplands, they are vulnerable to changes in surrounding land use practices.

The report describes 19 types of isolated wetlands, such as the Nebraska Sandhills wetlands, Delmarva potholes, and Carolina Bay wetlands, and provides ecological profiles of their fish and wildlife conservation values. A series of computer-generated maps in the report depict the potential extent of geographically isolated wetlands in each of 72 selected study areas, designed to provide a cross-section of national conditions. The report indicates that geographically isolated wetlands appeared to be most extensive and abundant in subhumid to arid regions of the country where precipitation averages less than 24 inches a year. More than half of the identified wetland acreage in eight of the 72 study areas - located in Nevada, Washington, Texas, Indiana, Wyoming, South Dakota, and Nebraska - was designated as isolated.

The report does not address the regulation of isolated wetlands and the maps do not depict isolated wetlands for jurisdictional purposes. The report and maps are available on the Internet at <http://wetlands.fws.gov/>. Source: USFWS Press Release 11 June 2002

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## New Decisions By IWC and NMFS to Impact Whales

On 24 May 2002, the National Marine Fisheries Service (NMFS) and the International Whaling Commission (IWC) announced that the next big battle over both whale captivity and whale hunting may be fought on Puget Sound, of the coast of Washington state. To begin, NMFS authorized capture of a young female orca called A-73. She will be the first orca captured in U.S. waters since six were caught in 1976 by an oceanarium supplier. The proposed capture of A-73 is for the purpose of reuniting her with her pod which is located in the Johnstone Strait, off Vancouver Island, British Columbia.

At virtually the same time the NMFS was making its announcement about A-73, the IWC agreed to allow the Makah tribe of Neah Bay, Washington to kill up to 20 grey whales over the next four years and the Caribbean nation of St. Vincent and the Grenadines to kill four whales per year, twice as many as the former quota. The IWC also voted to deny indigenous subsistence whaling permits to the Alaskan Eskimo tribes and the Russian Chukchi, who initially sought five-year combined total quota of 580 bowhead whales. In the past, the Eskimo and Chukchi people have usually obtained combined quotas since they hunt the same whale populations.

“Despite the actions taken by the IWC” said Congressman Don Young (R:Alaska), “the Alaska Eskimo Whaling Commission will continue their harvest under domestic regulations until this can be corrected by the IWC.” Unlike the Makah, who killed their only whale in 74 years during the May 1999 season, the Eskimo bands live along the Bearing and Beaufort Sea and are still heavy whale meat-eaters and depend upon hunting of whales and other animal species for most of their diet. The Chukchi are expected to continue whaling as well.

The IWC also denied an application by four coastal towns in Japan for permits to kill 50 whales per town for subsistence whaling. Japan as a whole has never complied with the IWC complete whale hunting moratorium until 1988 and, even in the past five years, has killed 550 whales in the North Pacific for “research”. Norway, a former member of the IWC, left the organization and resumed whaling in 1993 and has set a 2002 quota of 674 minke whales and 60 dolphins for itself “in order to study the relationship between their populations and the decline of fish stocks.”

On the other hand, at the IWC conference the countries of Mexico, French Polynesia, Papua New Guinea, Australia and New Zealand declared their waters to be whale sanctuaries. *Source: Animal People News: News for People Who Love Animals June 2002 vol. XI #5*

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### **Some Populations of Vicuna Downlisted by USFWS**

The U. S. Fish and Wildlife Service announced it has re-classified the vicuna populations of Argentina, Bolivia, Chile, and Peru from endangered to threatened under the U.S. Endangered Species Act, effective 1 July 2002. These populations have been downlisted to threatened because of ongoing increases in population numbers resulting from conservation actions undertaken in the four countries. A small population found in Ecuador remains listed as endangered.

A special rule accompanies this action allowing the import of legally sheared raw fiber from the four vicuna populations as well as products crafted from that fiber. These populations are also in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The special rule also requests that the four countries submit management plans prior to exporting products to the U.S.; requires the countries to provide annual reports to the Service; and directs the Service to review this information every two years to determine if reported vicuna conservation measures are effective. If, at any time, the Service decides that a country’s population is not continuing to recover, the agency may administratively restrict or suspend the approval of vicuna imports from that country to the U.S.

“Thanks to decades of global conservation measures aimed at curtailing the illegal wildlife trade in vicuna products, and on-the-ground partnerships working to develop viable management plans and protect vital habitat, these four vicuna populations continue to rebound,” said Assistant Interior Secretary for Fish and Wildlife and Parks, Craig Manson. “The United States is the world’s largest marketplace for wildlife and wildlife products, and the resumption of trade makes this beautiful wool once more available to our own apparel and specialty goods industry. Hopefully, this action will also benefit the economies of these four South American countries.”

The vicuna, the smallest member of the camel family, weighs about 90 pounds (40.82kg) and stands just under three feet 1m) at its shoulder. It is a hardy animal adapted to the high altitudes of the Andes Mountains. The Incas used wild vicuna for its luxurious golden-colored fleece and thought



the wool so valuable that only the ruler and his court were allowed to wear it. However, vicuna wool later became so popular throughout the world and the illegal wildlife trade so profitable that the species nearly went extinct. By 1974, fewer than 8,000 vicuna remained in the wild throughout the entire Andes range.

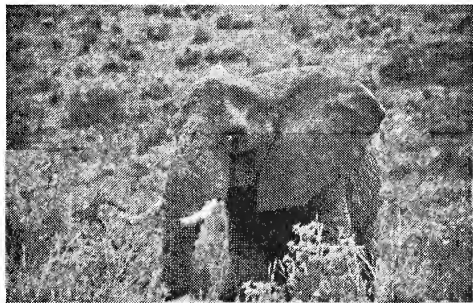
The vicuna was declared an official endangered species by the United States in 1975 and CITES members listed all populations on Appendix I - thus prohibiting any commercial trade in vicuna or its fleece. In the 1990s, some populations were moved to Appendix II — allowing for regulated trade. Vicuna management programs in Argentina, Bolivia, Chile, and Peru allow the shearing of fiber from live vicuna and the marketing of fiber and fiber products. The programs demonstrate important conservation benefits by providing rural communities with economic incentives for protecting vicuna populations. “We commend the extensive ongoing vicuna conservation and recovery efforts of these countries,” said Assistant Secretary Manson. Furthering conservation partnerships at home and abroad continues to be an important tool in helping ensure the long-term survival of the world’s natural resources.” *Source: USFWS News Release 25 June 2002*

### Florida Panther Baby Boom

Managers of the Florida Panther N.W.R. are reporting the birth of two litters to the “one of the most endangered mammals in the world” reports the USFWS. The seven new kittens provide a major boost to a wild population that only numbers between 80 and 100 individuals and is still severely threatened by loss of habitat and collisions with motor vehicles which have killed “44 panthers since 1972.” *Source: GREENlines Issue #1650 6/19/02*

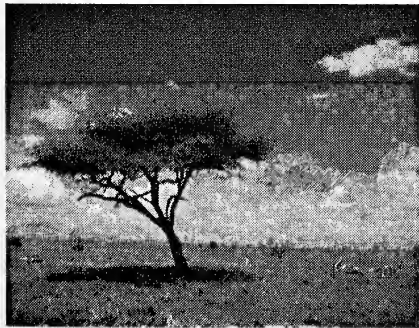
## Zoo Keeper Kenya Safari 2003

This is the African Safari you have been waiting to take! You'll spend 10 days right in the middle of the Lewa Wildlife Conservancy. The luxury tented camp looks over a ridge where you wake to watch elephants and giraffe browsing while you have your morning coffee. The game drives let you come within feet of hundreds of species of wildlife including black rhino in their native habitat! And the food is outstanding! Well don't just sit there. Let's go!! Because of your support of Lewa Wildlife Conservancy through Bowling, For Rhinos AAZK members have earned special discounts at Lewa Safari Camp (almost 50%! ). These trips are run with the Zoo Keeper in mind, so the wildlife viewing is more in-depth. And the best part is that the proceeds go directly into conservation. Here are the details of the trip.



Dates: May 28 to June 8, 2003

Cost: approx. \$3,100 US (includes round trip airfare, accommodations, food, driver and Land Rover) plus tips (approx. \$50 per person)



Extras (all at reasonable prices): Side trips to other Kenyan parks (Samburu, Meru, Jane Goodall's Sweetwaters, etc.), overnights at award-winning Masai lodges, horse or camel-back wildlife rides, shopping at local market, drinks (Tusker Beer® is tasty!).

We will only be taking 12 people to make sure everyone has a great time. These trips are becoming very popular, so book early. For more info or to reserve your space call Kevin at 813-968-3764 or visit my website at <http://web.tampabay.rr.com/zookeeper/>. The best part is that I coordinate the details so all you have to do is get on the plane and enjoy!

# Weighing Giraffes at the Calgary Zoo

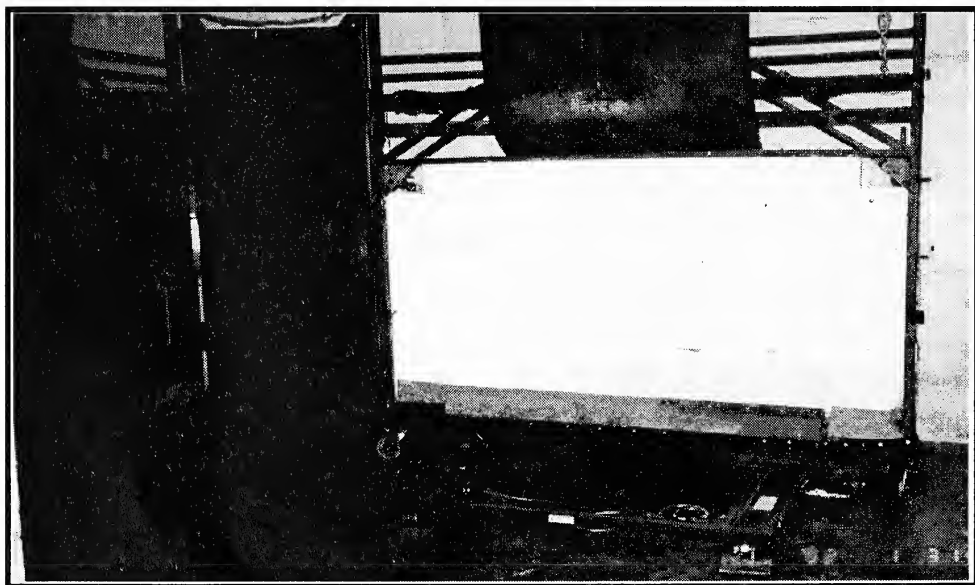
By

Mona Keith, Giraffe Keeper

Calgary Zoo, Calgary, Alberta, Canada

In 1994, *AKF* Vol. 21, I wrote an article on the weight gain of Mason, one of our reticulated giraffe calves (*Giraffa camelopardalis reticulata*). He was orphaned at 3.5 months of age so we implemented a system to weigh him to help monitor his health. We have continued to weigh him and our two female giraffes regularly, although our original system has been modified to accommodate the adult weights. In October 2001, Mason was sent to Safari West in California so it seems like an appropriate time to share his weight charts.

The scale is set up in our squeeze, so general squeeze conditioning is a must. The animals need to step up about 18cm (7 in.) onto the scale platform, be confined in the squeeze (but not “squeezed”), and a weight is recorded. Our weighing system consists of two 84cm (33 in.) long load bars positioned 1m (33 in.) apart in the squeeze. A metal frame, 84cm x 131cm (33 in. x 51.5 in.) sits on top of the load bars and supports the weighing platform. The platform fits the dimensions of the squeeze so there are no holes for giraffe feet to fall into. This platform measures approximately 91.5cm x 219cm (36 in. x 86 in.). The platform has several small feet on the underside at the corners and ends so when the giraffe is centrally positioned, they are not touching the ground but when the giraffe is placing a lot of weight on one of the corners or ends (i.e. when getting on and off the platform) they do touch the ground giving the platform support and preventing breakage.



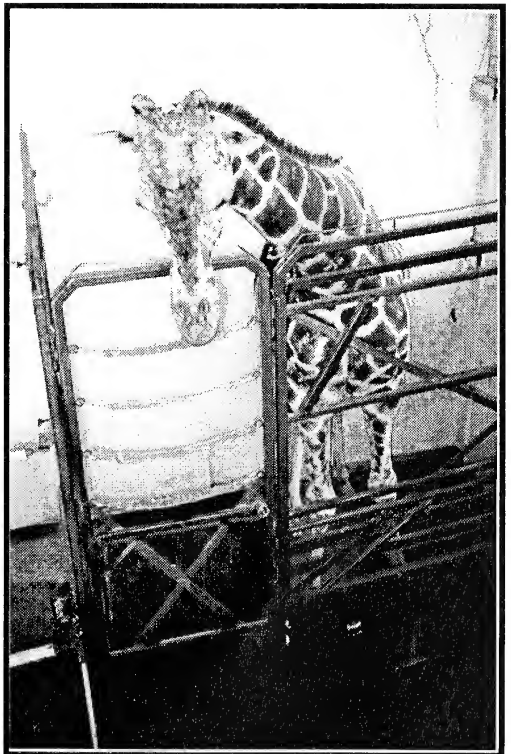
**Photo 1.** Metal frame on load bars in “open” position of squeeze. (Photo by Mona Keith)



**Photo 2.** Weighing platform in place. *(Photo by Mona Keith)*

Our squeeze is not a walk-through chute. Due to space limitations, it collapses up against a wall when not in use. It swings out from the wall and the side closest to the wall is anchored to the floor. The other side swings open to allow the giraffes access. Once the giraffe positions itself squarely in the squeeze, this side can be swung shut and pinned behind the giraffe.

The conditioning of the giraffe is not only to get them to enter the squeeze area but also to position themselves correctly. This process requires one keeper to be up on a ladder in front of the squeeze with the food reward given when the giraffe is in the correct position. The second keeper pushes the moving side of the squeeze closed around the giraffe and pins it closed behind the animal. The keeper on the ladder stays in position for the entire procedure, rewarding the giraffe with food and monitoring its condition at all times. A weight is taken when the giraffe is not leaning on the squeeze structure and is positioned squarely over the load bars.



**Photo 3.** Mason (age 9) in squeeze in "open" position. *(Photo by Mona Keith)*

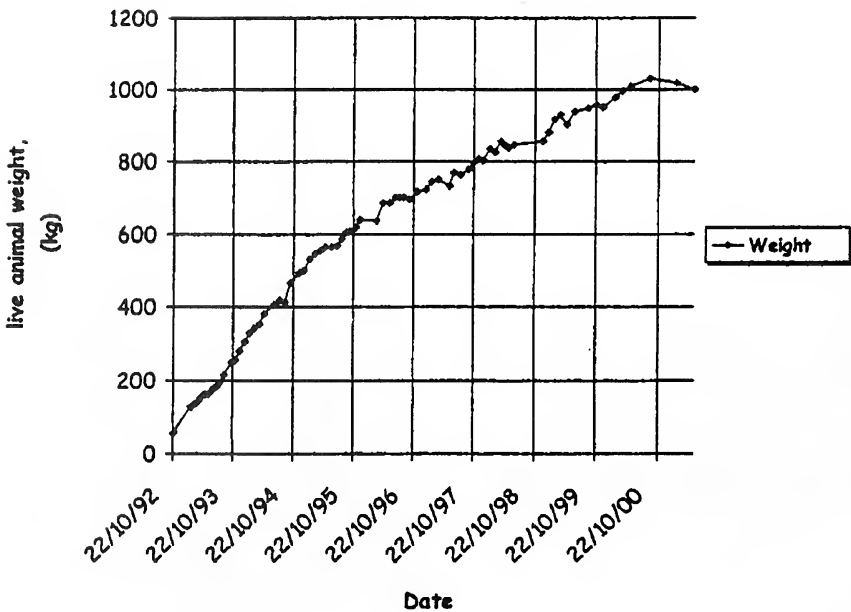


**Photo 3.** Mason (age 9) in squeeze in “closed” position. (Photo by Mona Keith)

The original graph from the 1994 paper showed Mason’s weight beginning at one day of age, 22 October 1992, and ending when the paper was written on 29 January 1994. Figure 1 shows Mason’s weight gain from October 1992 – January 2001.

Figures 2 & 3 show the weights we have for our two female giraffes: Mardi, born 27 February 1990, and Carrie, born 29 May 1993. We began weighing the adults in 1997 and we continue to weigh them approximately once a month.

**Figure 1** Mason’s weight 1992 - 2001

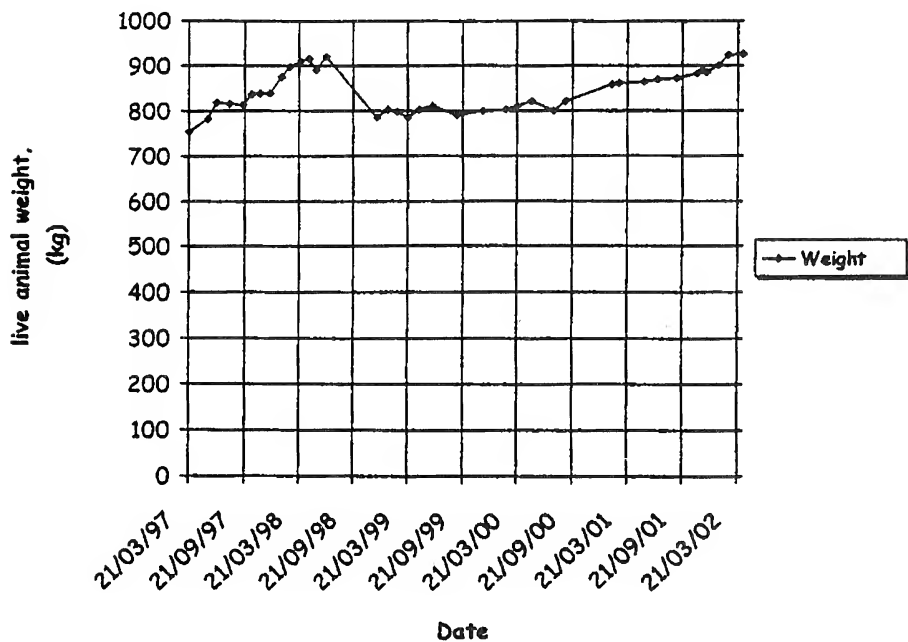


# Table 1

## Mason's weight at 6 month intervals

Date	Weight ( Kg)
22 Oct 1992	54
13 Mar 1993	138
29 Aug 1993	215
27 Mar 1994	356
1 Oct 1994	466
1 Apr 1995	554
2 Sep 1995	606
6 Mar 1996	634
26 Sep 1996	694
21 Mar 1997	751
12 Sep 1997	777
27 Mar 1998	854
8 Dec 1998	853
19 Mar 1999	929
2 Sep 1999	948
20 Mar 2000	996
28 Aug 2000	1030
17 May 2001	998

### Figure 2    Mardi's weight 1997 - 2001

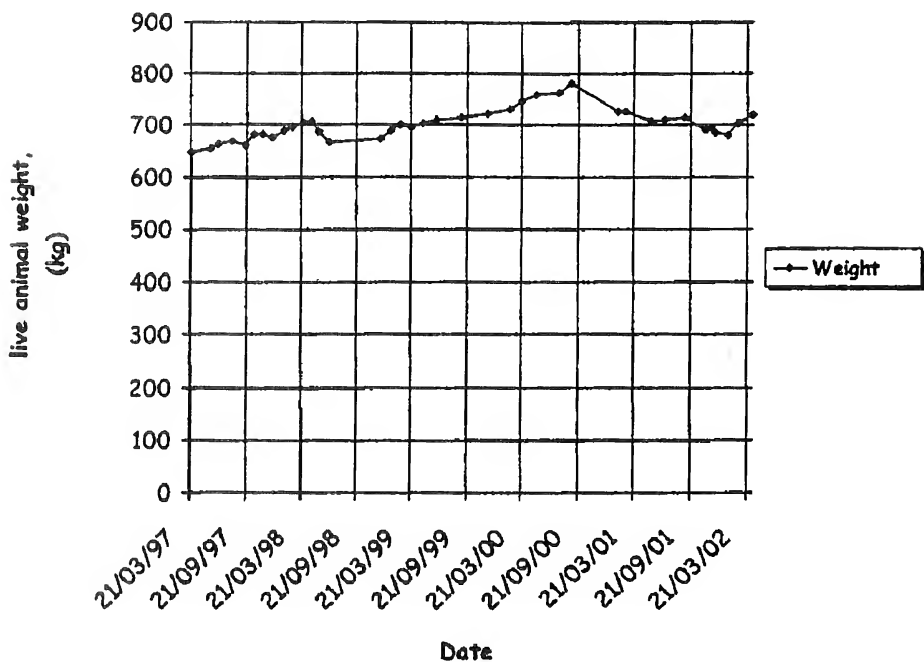


# Table 2

## Mardi's weight at 6 month intervals

Date	Weight (Kg)
21 Mar 1997	752
12 Sept 1997	813
27 Mar 1998	909 (gave birth Sept.22, 1998)
8 Dec 1998	783
19 Mar 1999	783
2 Sept 1999	790
20 Mar 2000	810
28 Aug 2000	819
17 May 2001	865
7 Nov 2001	881
4 Apr 2002	926

### Figure 3    Carrie's weight 1997 - 2001



# Table 3

## Carrie's weight at 6 month intervals

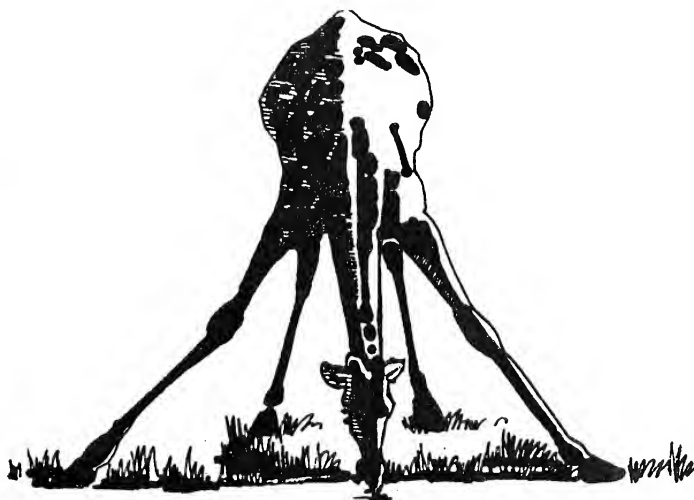
Date	Weight (Kg)
21 Mar 1997	647
12 Sep 1997	662
27 Mar 1998	706
8 Dec 1998	674
19 Mar 1999	693
2 Sept 1999	716
20 Mar 2000	747
28 Aug 2000	783 (gave birth Nov.23. 2000)
17 May 2001	708
7 Nov 2001	690
4 Apr 2002	720

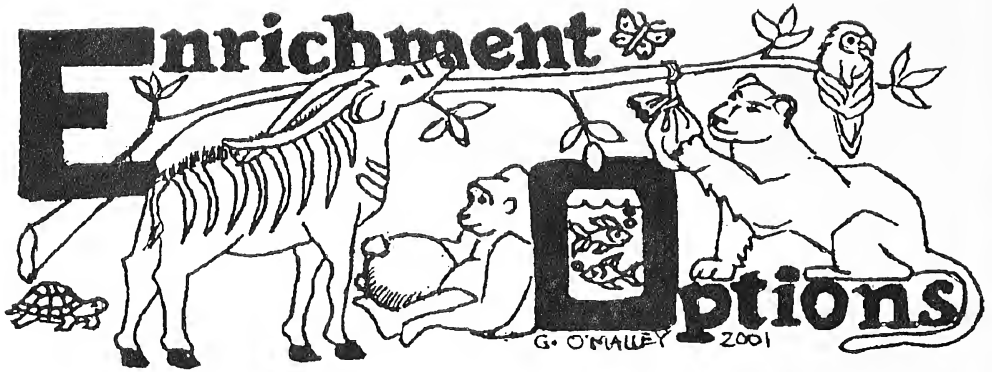
### Acknowledgements

I would like to thank Pam Pritchard for her editing support and Deanne Snell for her data input and graph generating expertise.

### References

Keith, M. 1994. Weight gain of a giraffe (*Giraffa camelopardalis reticulata*) after being orphaned at 3.5 months of age. *Animal Keepers' Forum* 21(5): 172-175.





*By Jan Roletto, Arcata, CA  
and Dawn Neptune, Utah's Hogle Zoo*

## PVC - "Our Friend" - Part 3

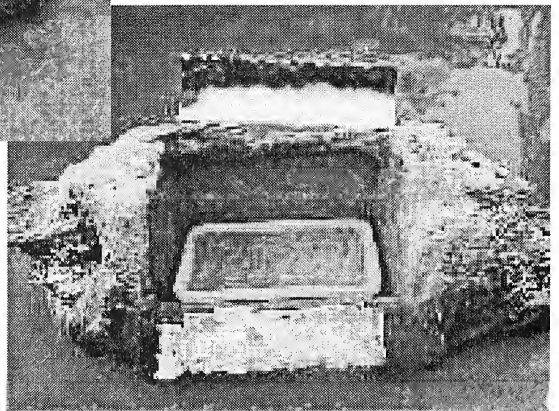
*By Tina Fridman, Animal Keeper  
Disney's Animal Kingdom  
Lake Buena Vista, FL*

### GRACKLE/DUCK-PROOF GUARDS FOR FLAMINGO FEEDERS

There were some challenges keeping ducks and grackles from feeding from the flamingo feeders. PVC came to the rescue once again. Our flamingo feeders are made from fiberglass, and resemble sections of a fallen tree.



Pieces of PVC were cut long enough to go from one end of the feeder to the other. The pieces were attached to the feeder with hinges for easy keeper access. This prevented the ducks from reaching in via the bottom, and the grackles from perching on the bottom rim.

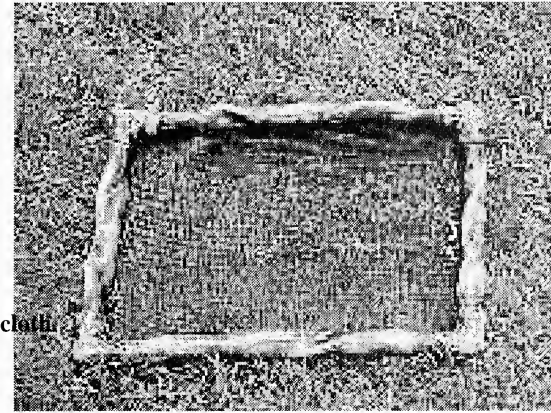


Photos above and at right show the grackle/duck-proof guards used on the flamingo feeders at Disney's Animal Kingdom.



### FLOATING DUCK FEEDERS

The challenge was feeding the ducks in the water without having the food float directly to the drain. For this simple solution, one-half inch PVC pipe was used to form a 6x8-inch rectangle, with the pipes connected by one-half inch elbows. During the scuffing and torching process the PVC was twisted while the pipe was still hot and flexible. This was done to give the pipe a natural branch-like effect. Black shade cloth was attached to the rectangle with cable ties to provide a surface for food placement. The whole structure was placed in the water and anchored down with a small rope and a rock. This worked well, and also enriched the ducks at the same time.



Photos at left and below show floating duck feeders constructed from PVC pipe and black shade

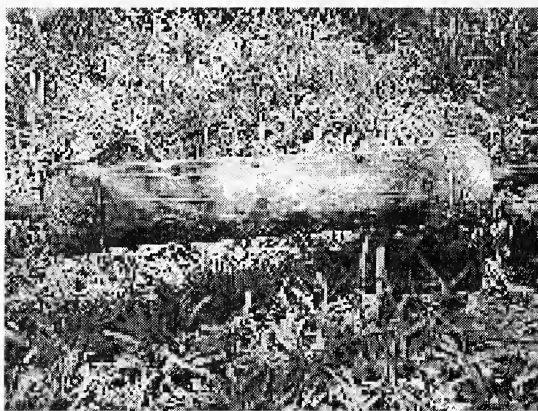


### ROTATING FOOD DISPENSER FOR SMALL MAMMALS

A six-inch piece of PVC pipe was cut to a length of two and one half feet. Various sized holes were drilled on all sides of the pipe. A cap was placed on each end of the pipe, then a one-inch hole was drilled out of the center of each cap.

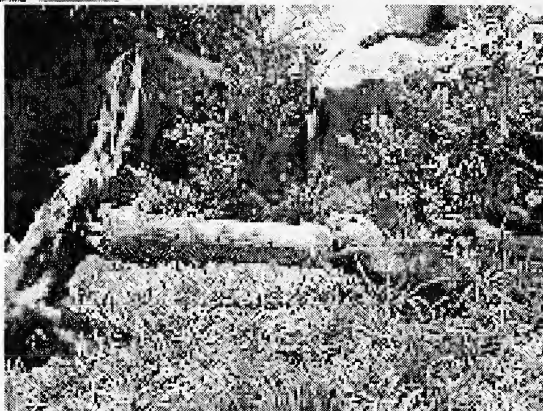
Next, a one-inch piece of PVC pipe (cut two feet longer than the six-inch piece) was placed in the pre-drilled holes of the caps. This one-inch piece served as the “axle” for the six-inch piece to spin. Holes were drilled at the end of the axle piece to allow for cable ties to be attached and clips added. The whole unit was then able to attach between two trees in the exhibit. Food items were placed inside the six-inch piece of pipe, so when it spun it would dispense the food items through the various sized holes.

This device was used for 2.0 Asian small clawed otters, and 2.0 Ring-tailed lemurs. Everyone seemed to enjoy and be interested in it, and the guests enjoyed watching them interact with the device.



Photos at left and below show the use of PVC pipe in constructing a rotating food dispenser which was used for Asian small-clawed otters and Ring-tailed lemurs at Disney's Animal Kingdom in Florida.

*All photos for this series provided by the author, Tina Fridman.*

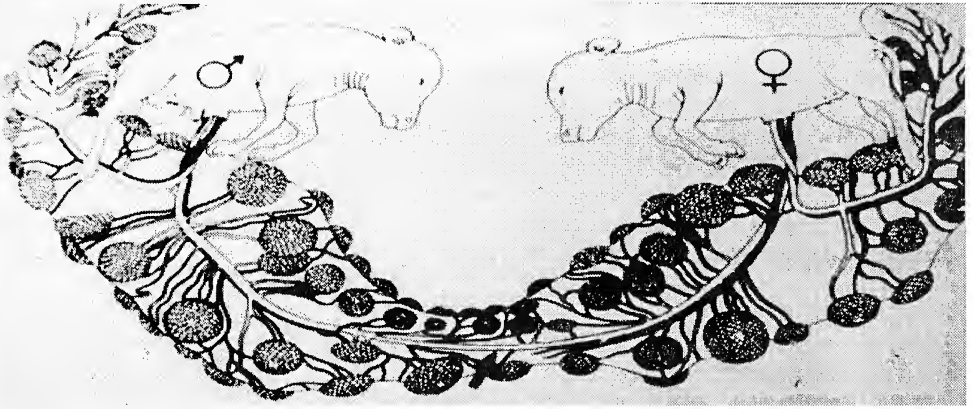


*(Ideas appearing in this column have not necessarily been tested by the editors for safety considerations. Always think ahead and use good judgement when trying new ideas. You are invited to submit materials for the Enrichment Options Column. This might include recipes, toys, puzzle feeders, olfactory enrichment ideas, etc. Drawings and photos of enrichment are encouraged. Send to: AKF/Enrichment, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614-2054. Eds.)*

**Visit the AAZK Enrichment Website - [www.enrich.org/aazk](http://www.enrich.org/aazk) or to join the Enrichment Listserve, email [jackbell@humboldt1.com](mailto:jackbell@humboldt1.com)  
An archive of past postings may be viewed at [www.cava.org/enrich](http://www.cava.org/enrich)**

# FREEMARTINISM: A REPORT IN SOUTHERN LESSER KUDU

*(Tragelaphus imberbis australis)*



*By Joseph Robertia, Zoologist  
Formerly of  
Wildlife Conservation Society's Wildlife Survival Center  
St. Catherines Island, Georgia*

## What is Freemartinism?

Salisbury & Lodge (1978) define a freemartin as a calf in which the sex of a genetic female is apparently modified by male hormones or chimerism resulting from the male fetus. In simplest terms, a freemartin is a sterile female born co-twin to a male. Freemartinism is one of the most frequent congenital female abnormalities affecting the fertility of domestic female cattle (Peters & Ball, 1987). This abnormality, although well known to most dairy and beef cattle farmers and occasionally seen by sheep farmers, has never been reported in exotic bovines in captivity.

The cause of freemartinism is not fully understood, however it is generally accepted that in cattle with multiple conceptions, the placental membranes and blood vessels fuse so that a common circulation develops between the fetuses (Merck Veterinary Manual 8<sup>th</sup> ed., 1998). This fusion allows for a transfer of fluids, cells, and hormones. Since this fusion occurs before sexual differentiation, the vascular interchange between the twins, and subsequent hormones of the male, inhibit development of the female reproductive tract.

In 92% of cases of mixed twins in domestic cattle, the females are sterile (Merck Veterinary Manual 8<sup>th</sup> ed., 1998). The external genitalia of the female will generally appear normal. However, the female's reproductive tract is severely underdeveloped and sometimes even contains some elements of a male's reproductive tract (Lyon, 1995). Remnants of seminal vesicles may be present as well as female ducts (Lyon, 1995). Freemartins have a short vagina that ends blind and lacks a cervix, and does not communicate with the uterus (Merck Veterinary Manual 8<sup>th</sup> ed., 1998). The ovaries of the freemartin do not develop correctly, and they may remain very small. They may only appear as spindle-shaped structures (Noakes, 1986). The ovaries of a freemartin are not capable of producing oocytes that could be fertilized, and subsequently, do not produce the hormones necessary to induce estrus behavior (Lyon, 1995). If this were the only problem, the cow could be used for embryo transfer, but this is not possible because her uterus is underdeveloped as well. She is not able to sustain a fetus, and her reproductive tract does not allow the hormonal excretions necessary to maintain a pregnancy (Lyon, 1995).

## Diagnosis of Freemartinism

Confirmation of freemartinism can be determined through three methods, and when possible, suspected animals should have all three tests performed. These methods are cytogenetic analysis, ultra sonography, and physical examination. Of these three methods cytogenetic analysis is the most accurate method. Cytogenetic examination can determine the presence of XX and XY chromosome patterns in freemartins (Merck Veterinary Manual 8<sup>th</sup> ed., 1998). This is the result of the fusion of the placental circulation of the twins. This specific blood-typing test is available through the purebred cattle associations, universities of agriculture or veterinary medicine, and elsewhere.

Ultrasound is a legitimate method for determination of freemartinism. Infusing water into the vaginal tract and monitoring its course via ultrasound may yield the degree of hypoplasia. Dominguez (1989) classified the severity of freemartinism into three separate categories. These classifications, although useful in relating the degree of freemartinism, serve no practical use because all of the types of freemartins are sterile (Lyon, 1995).

Physical examination is fairly accurate in determining freemartinism while also being economical. Since much of the incomplete development is anterior to the hymenal region, Roberts (1956) test tube method of assessment is of value in detecting affected individuals (Jennings, 1984). A finger or speculum may also be used (Merck Veterinary Manual 8<sup>th</sup> ed., 1998). Precautions should be taken against spreading possible infection and/or damaging the vaginal mucosa during such examinations (Jennings 1984). In domestic cattle, a calf (1-4 weeks old) should be able to accept the full length of a 13-15cm (5.12"-5.91") sterile tube, while in a freemartin 5-6cm (1.97"-2.36") will be accepted (Merck Veterinary Manual 8<sup>th</sup> ed., 1998).

## Freemartinism in Lesser Kudu

On 28 November 2000, a female in the Wildlife Survival Center's (WSC) herd of 1.6.3 lesser kudu (*Tragelaphus imberbis australis*) gave birth to twins. The incidence of twinning in most antelope is

extremely rare. The twins, one male and the other a female, appeared to be in good health during their neonatal examinations. Both had weights and morphological measurements that were within normal parameters. The only gross anomaly that was noted was the presence of horn buds in both calves. Horn buds are typical in male calves, but have not been observed in females at (WSC). No references were found regarding horn buds in females in the existing literature for this species. However, since no other abnormalities were detected, both calves were released back into the herd. The two calves continued to be closely monitored and appeared to be thriving over the next seven



Female freemartin southern lesser kudu.

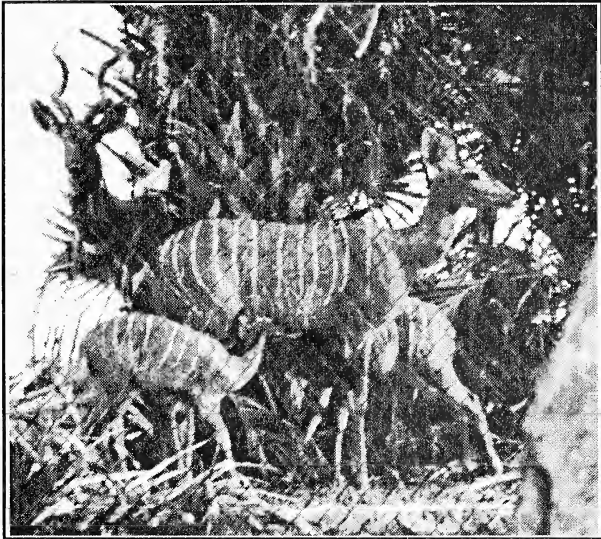
days. On the morning of the eighth day, the female calf began to show signs of deteriorating health. She was found to be severely hypothermic and maternal neglect was suspected. The calf was removed for artificial rearing by the (WSC) staff. The kudu calf responded quickly to hand rearing and her health improved progressively. Over the next few weeks, the veterinary and animal management staffs discussed the possibility of these calves being freemartins. It was agreed upon that we should take advantage of the opportunity presented by hand-raising this animal and began testing for freemartinism.

At the time of this writing, physical examination (performed both digitally and by the test tube method) and cytogenetic analysis have been performed on the female calf. The results of both are that the calf is unambiguously a freemartin. Ultrasound is still scheduled for the female calf. The

detailed results of these diagnostic tests will be reported elsewhere. The horn buds of the female have not regressed, and although they have not grown either, we can only speculate as to if they will. Horn development in male calves typically begins at 9-12 months. During the next opportunity for veterinary examination, the male calf will have blood samples collected and submitted for cytogenetic analysis.

**Genetic and Demographic Effects**

To scientifically manage captive populations for conservation and long-term survival, breeding recommendations must be made for the population as a whole (Wiese & Willis, 1996). Population Management Plans (PMP's) establish breeding recommendations based on several factors including the population's genetics and demographics. In small, closed populations such as many existing in zoo populations, some inbreeding is inevitable. However, captive managers attempt to maintain a high genetic diversity while simultaneously maintaining a low mean kinship within the population.



Dam with twin calves at WSC.

A breeding strategy that pairs animals based on mean kinship and preferentially breeds those animals with low mean kinship values will maximize gene diversity, minimize long-term inbreeding, and maintain the allelic frequencies captured in the founders (Weise, 1996). Since any animal that cannot or does not breed does not pass on its genetic information to the next generation, it is effectively already dead in relation to its benefit for the future population (Weise, 2000). By not detecting freemartinism, animals that are sterile or with low reproductive fertility may be integrated into PMP's, thus causing deleterious effects in both the short and long-term.

In the short-term, integrating a freemartin into a PMP would affect the animal's sire, dam and siblings by curtailing their breeding recommendations. These animals related to the freemartin could potentially be recommended not to breed, or rotated out of breeding situations, since there would be a higher number of viable animals of the same relation believed to be existing within the population. By removing these animals from the breeding nucleus, or by cutting them short before they could meet their lifetime reproductive contributions, this could then affect the captive population in the long-term by under-representing their allelic frequencies, thus causing higher rates of inbreeding within the population. This could then act as a catalyst to have further long-term deleterious effects on the population's future potential. The population would be smaller than predicted. The analytically established target size to which the population aspires will not be met since the actual population size will lag behind the potential growth that could have been reached. Stopping or curtailing breeding recommendations for the animals related to the freemartin would also damage the population's future growth potential by creating holes in the stable age distribution (Weise, 2000). "Holes" are created in an age pyramid when animals do not breed in a specific year or when the number of offspring produced in a specific year is not sufficient to meet the requirements for a stable age distribution (Weise, 2000). Holes will cause the actual population to decline or fall below the predicted size. It is also conceivable, that integrating freemartin animals into the breeding population could create holes since any pairing with these animals would be infertile. In the time utilized in these breeding attempts, the partner to the freemartin animals could move past their prime-breeding peak, or completely out of their reproductive years (Laurie Bingaman Lackey, per. comm.).

## **Conclusion**

Although twinning is rare in most antelope, it is possible for any species. Testing of all mixed twins for the possibility of freemartinism could greatly benefit captive populations through early detection of any abnormalities. Furthermore, any evidence of reproductive failure of an antelope species should be investigated immediately. In some cases, there are no symptoms of freemartinism at birth because the male twin may have been aborted at an earlier stage of gestation (Lyon, 1995). Animals involved in reproductive pairing that repetitively do not conceive should be tested. Although the incidence of freemartinism in exotic animals is just beginning to be reported, if undetected its damaging effects on a closed population are clear. Through increased knowledge and proper surveillance of this condition, freemartinism can be detected early enough to prevent damage from occurring within a captive population.

## **Acknowledgements**

I would like to thank Kathryn Lurtz, the Veterinary Technician at the Wildlife Survival Center, for first bringing the condition of freemartinism to our attention. I would like to thank Dr. Terry Norton for supporting this endeavor and for performing many of the tests discussed, as well as for editing this manuscript. I would like to thank Jeff Spratt and Pat Thomas for also supporting this project and for their editorial comments. I would like to thank Dr. B.P. Chowdhary, Associate Professor of Veterinary Anatomy and Public Health at Texas A & M University, for performing the cytogenetic analysis.

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# PENGUIN TRAINING AT LINCOLN PARK ZOO

*By Jill Gossett, Keeper  
Lincoln Park Zoo, Chicago, IL*

Lincoln Park Zoo's Kovler Penguin/Seabird House (KPSH) is home to three species of penguins, kings (*Aptenodytes patagonica patagonica*), chinstraps (*Pygoscelis Antarctica*) and rockhoppers (*Eudyptes crestatus crestatus*). They are housed in an indoor habitat with gunite rockwork and an 18,000-gallon, temperature controlled pool. The lighting in the exhibit is controlled by a computer system and is on a Northern Hemisphere light cycle. The air temperature is kept between 35-40°F (2-4°C) while the pool is kept at 40° F (4°C). A camera mounted in the ceiling is fed into a VCR to record or view the exhibit while unattended by keepers.

The species of fish offered includes capelin, trout, herring and smelt in various sizes. Each individual is hand-fed as much of each species as it wants and the total consumptions are recorded daily. In KPSH feeding was done several times throughout the day by going to each individual. A plate of fish was left in the exhibit in a center area at all times for free-choice feeding.

Historically, birds were given maintenance physical examinations once a year off-exhibit in the keeper area. These exams included a veterinary exam, blood collection, nail and/or bill trims, and weight. Each rockhopper or chinstrap had to be physically restrained by one keeper. King penguin restraint required two keepers. To obtain a weight, the smaller species were restrained in a bucket; the larger species was restrained on the scale. This had the potential to be dangerous for both keepers and birds. To help to eliminate some of the stress and build trust between keepers and animals, I designed a program to scale train them.

Scale training began for all three species in June of 1999. A piece of plywood the approximate size of the scale was put into the exhibit in a flat, center area and left all day. This desensitized the penguins to walking over a foreign object and also established a standard feeding station as opposed to keepers actually approaching each individual. I also began establishing a bridge by whistling once just before a fish was fed. After about a month, I introduced the scale to the exhibit. It was placed in the same area the plywood had occupied. The feeding routine continued as usual, but individuals were encouraged to come to the scale area by offering a fish a short distance away from them and then rewarding for each step they took toward the designated area.

The area was observed through the remote camera to see if there was any interaction with the scale when keepers were not present. Initially it was ignored, however, in October, just two months after it was introduced, the first rockhopper jumped onto the scale. It was decided to put a non-skid mat onto the surface of the metal scale to prevent sliding. Interest increased once the birds realized they could hop onto it safely. It was at this time that the actual training protocol was implemented. Any penguin that stood on the scale would be fed first and as much as it wanted until it left. This caused some initial resentment among the rest of the flock, but it also served to show the more timid individuals that no harm would come to them but would instead be beneficial to them. No one was ever forced on or off the scale. Two weeks later the first king penguin stepped onto the scale.

It was soon determined that each species was going to progress at its own pace. Each of the three species had various levels of trust with the keepers and some required more work developing a relationship before scale training could proceed. Within three months of the introduction, the majority of the rockhoppers were being fed on the scale. Because they were so quick to learn, new behaviors were introduced to their protocol such as holding on the scale for increasing amounts of time. This was accomplished by holding a fish over their heads and saying "hold" before rewarding them. This helped to get a more accurate weight. All weights were recorded before any fish had been fed. Because the individuals of this species were consistently standing on the scale, the protocol was altered. Any rockhopper that would not stand on the scale to be fed would not be hand-fed. There was, however, still a plate of fish present at all times in the exhibit so that none of the animals would go hungry.



By this time, there were only two king penguins consistently standing on the scale and none of the chinstraps had shown any interest. Three of the six kings and all five of the chinstraps were not receptive to keeper interaction and not comfortable with new objects in their habitat. I hoped that when these individuals saw the benefits of standing on the scale they would feel more comfortable. The same protocol was in place for both of these species: feeding individuals on the scale first and hand-feeding the rest last.

Our flock of chinstraps stopped molting in 1997. In September 2000, it was decided to try Depo-Provera® therapy to try to stimulate a molt. This required weekly weights as well as restraint, blood draws and injections. The chinstraps were surprisingly calm on the scale once they realized they only needed to stand there. Perhaps this is because previously they had observed the other birds on the scale. In February 2001, the chinstraps began to molt. Although none of them achieved a complete molt, we did begin to see different behaviors. Prior to the hormone therapy, they were not very active. They stood in essentially the same places, did not interact with each other or the keepers very much and showed no interest in standing on the scale. After the therapy, they began to swim in the pool, stand together and interact with keeper staff. By the end of February 2001, the first chinstrap hopped onto the scale.



The author is shown with a chinstrap penguin on the scale. (Photo by Lisa Taylor)

By this time, breeding season had begun and the protocol for all three species had to be changed back to the original plan which was to feed whomever stood on the scale first and then to move around the exhibit to the other individuals to feed. The rockhoppers had become territorial and did not want to leave their niches. They were occupied with collecting nest material. The chinstraps and kings, that were not showing breeding behaviors, became our primary focus. One chinstrap in particular became friendly with keepers and while she never wanted to be touched, she would call and solicit attention. The other chinstraps would watch her being fed on the scale and several of them would approach the area. The kings did not show much improvement at this time. The same three remained consistent while I continued to work on developing trust with the remaining birds by moving slowly around them, talking softly to them, touching them slightly and rewarding them with a fish as well as letting them investigate me with their bills.

In May 2001, the training protocol saw some changes. It was reviewed and implemented as standard for every keeper working with the penguins. Also, on the advice of a training consultant we have implemented some changes and seen dramatic improvement within the collection. The plate of food that was once available at all times was gradually eliminated.

This gives us complete control over the diet and

we know exactly how much food each individual is consuming. We hand-feed all the birds at the end of the day even if they do not stand on the scale but they are the last individuals fed. We have also eliminated extra feedings and now only feed twice daily. These consistent scheduled feedings have given the penguins more privacy and security. It also motivates them to perform the behaviors more readily and their appetites seem more consistent. We also spend less time at each feed. If the birds show no interest, we leave. Since competition when we enter the exhibit to feed has increased, we decided it was permissible to move the scale to various areas to prevent overcrowding in the station



area. The consistency among all keepers working this area has contributed greatly to the advancement of this program.

As of September 2001, all but a few individuals are consistently stepping on the scale to be fed by me. The birds are making progress on a daily basis with the other keepers and we all continue to develop stronger relationships with each bird. Already we have seen a dramatic difference in the chinstraps' behavior toward the keepers. All but one have become more social toward us. Two of them cautiously accept being touched and all but one will consistently step on the scale. We hope to eventually get them all to consistently accept tactile manipulation. We anticipate a repeat of the hormone therapy this year in hopes that they will achieve a full molt. It is hoped that by developing our relationships and trust these procedures will be less stressful for them and for us.

Several of the kings are already being trained for tactile manipulation simply because they have accepted it so well. Their routine includes running hands over both eyes and holding the bill for the count of 10, running hands down the belly and wings, holding both ankles alternately and touching/pulling on the toenails. Periodically, the nail trimmers are brought in and all the penguins that choose to do so are allowed to explore them. Two kings and one rockhopper can now have their nails trimmed by one keeper without restraint.

Future plans include working with all three species to accept restraint. For rockhoppers and chinstraps this would involve holding them belly down across the forearm with their heads tucked under the arm toward the back. If the individual reaches back to bite, their foot would be placed in their mouth so that they bite themselves. For kings, a special baffle board may be constructed. The height would be 4ft. (1.219m) with a U-shape cut out from the floor to within 1ft. (0.3m) of the top. The opening would be padded and would allow a veterinarian access to a wing for a blood draw while the top area protects the veterinarian from a potential bite.

We would also like to work with all three species to target to increase our ability to move them to different locations without stress. We also feel this could lead to other training opportunities such as teaching each species to station in different sections of the exhibit to further eliminate competition at feed times. As our training program advances we feel the comfort level of the animals will increase, which will result in healthier birds. At KPSH, we are committed to continuing to advance our training to provide the best and least stressful care for our birds.

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## Officials Seize Six Tons of Smuggled Ivory

Wire services out of Singapore report that six tons of smuggled African ivory were intercepted last month in that city. The cache was headed for Japan for use in making carved name stamps called hankos. The illegal cargo, consisting of 552 pieces of raw elephant tusk and over 40,000 ivory pieces, is worth an estimated \$850,000.00 US.

Singapore's Agri-Food and Veterinary Authority is the enforcement agency for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), an international agreement against the smuggling of wildlife species threatened with extinction.

Although Singapore officials discovered the cargo on 28 June, the agency refused to confirm reports of the event until 11 July for fear of compromising an investigation, noted agency spokesman Goh Shih Yong.

Various estimates by conservation organizations put the African elephant population at anywhere from 400,000 to 550,000 in total. In Kenya alone, the population has declined by some 80% from an estimate of 150,000 animals in the 1980's to around 30,000 today.

# Two New Monkey Species Discovered

A scientist working in Brazil's central Amazon basin have discovered two new monkey species which have previously been unknown. About the size of small cats, the monkeys were discovered by Dutch scientist Marc Van Roosmalen. He works in a little explored area of the Amazon near the confluence of the Tapajos and Maderia rivers. The site – Brazil's National Institute for Amazon Research – is located at Manaus, about 1800 miles (approx. 2900km) from Rio de Janerio. The flood plain where Van Roosmalen has worked for the past five years is similar to a landlocked archipelago where dozens of smaller, crisscrossing rivers serve as natural barriers, allowing once-similar species to evolve differently over thousands of years.

The two newly discovered primates have been named *Callicebus bernhardi* and *Callicebus stphennashi* and have been fully described in the journal *Neotropical Primates*. The bernhardi monkey – named after Holland's Prince Bernhard – is remarkable for its dark orange sideburns, chest and inner sides of its limbs. It has a reddish-brown back and a white-tipped tail. The monkey is about 15 inches (38cm) long in body length with another 22 inches (55cm) of tail. Average weight is around two pounds (907 grams). The second monkey – the stphennashi – is silver colored with a black forehead and red sideburns, red chest and red on the inner sides of its limbs. Body measurement is about 11 inches (28cm) with 17 inches (43cm) of tail. Average weight is 24 ounces (680 grams).

The two new monkeys are the fourth and fifth species described by Van Roosmalen, who says he has discovered an additional 20 unnamed species in the same central-Amazon region. There are 310 known monkey species in the world and Brazil has the largest number with 95 known endemic species.

Though the monkeys exist in a little-disturbed portion of the Amazon and aren't currently threatened with extinction, Van Roosmalen is working to guarantee their survival. He is offering to name the other discovered species after people who will pay to help create nature reserves in the area. Under Brazilian law, citizens can create private nature reserves on their land in exchange for property tax exemptions. So far, Van Roosmalen, a naturalized Brazilian, has created two reserves covering about 150,000 acres (234 sq. mi.) of untouched forest.

Conservation International President Russell Mittermeier, a co-author of the species descriptions, was quoted as saying "This once again demonstrates how little we know about biodiversity; these are the 37<sup>th</sup> and 38<sup>th</sup> new primate species described since 1990." --Excerpted from *Associated Press* report of 6/24/02

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## Cell Phones Endanger Gorillas

An investigative TV report has highlighted the connection between coltan mining in the Democratic Republic of the Congo and "drastic decline" of the eastern lowland gorilla says BBC News 6/11. The price of coltan, used to make mobile phones, has surged nearly 10-fold in the last few years and "80% of the world's coltan reserves are in the "last stronghold" of the great apes. In the last five years the lowland gorillas have "declined by 80-90%, with just 3,000 or so animals left alive."

Source: *GREENlines* Issue #1651 6/20/02

# The Water Column

By

*Dan Conklin, Senior Biologist, Florida Aquarium*

*Bruce Elkins, Curator of Waters, Indianapolis Zoo*

*Kevin Shelton, Associate Curator, Florida Aquarium*

This month I would like to address what happens when the water quality goes wrong. We have discussed the nitrogen cycle at length but here's a quick review. Animals excrete waste as ammonia, bacteria breaks down the ammonia to nitrite, and another bacteria breaks down nitrite to nitrate, which is used by plants and algae or lost to the atmosphere through another process.

There are harmful and even deadly effects if this cycle does not function properly in an aquarium. Ammonia is the most toxic of these products. The exact mechanism of this toxicity is not fully understood but it seems to interfere with ion transport in the central nervous system. Animal waste, decaying plants and excess food can be sources of ammonia. Most water tests for ammonia will give you the total ammonia nitrogen (TAN) in parts per million (PPM) also read as milligrams per liter (mg/l). In general a level of .2ppm is considered acutely toxic to most fish. But it's not that easy. There are many factors involved. First the TAN is a combination of ammonia ( $\text{NH}_3$ ) or unionized ammonia (UIA) and ammonium ( $\text{NH}_4^+$ ) or ionized ammonia. These two components form an equilibrium reaction in water. The  $\text{NH}_4^+$  is considered by most to be non-toxic. So it is the  $\text{NH}_3$  that we are concerned with in our system.

Now there are also two other factors that can affect ammonia toxicity. The temperature and pH of the water have significant effects on the ammonia/ammonium equilibrium. We will avoid getting bogged down in the chemical reactions. Generally, as the temperature increases in the system the percentage of unionized ammonia (UIA) also increases. Thus a warmer system is more at risk to ammonia toxicity than a cold water system. Likewise as pH increases in the system the percentage of unionized ammonia (UIA) also increases. Thus a basic system ( $\text{pH} > 7$ ) is more susceptible than an acidic system ( $\text{pH} < 7$ ). The pH has a much greater effect than does temperature. As pH is measured on a logarithmic scale this is easy to explain. The *Journal of the Fisheries Research Board of Canada* vol. 32, 1975, has an excellent table showing the percentages of unionized ammonia at various temperature and pH combinations. This has been reprinted in many books since.

Although it may seem that cold, low pH systems have less problems with ammonia toxicity, it is quite the opposite. It is true that the toxicity of the ammonia is less in these systems. But the bacteria that convert ammonia to less toxic compounds are not as active in these conditions. The bacteria break down the ammonia much faster in warm water with a slightly higher pH. So you'd have less ammonia in the water to be a problem.

The other product of the nitrogen cycle that can cause problems in aquatic systems is nitrite ( $\text{NO}_2$ ). Nitrite is less toxic than ammonia and levels should be maintained below 1ppm. Nitrite enters the blood of the fish through the gills and interferes with the ability of hemoglobin to carry oxygen. Again there are factors that affect the toxicity of nitrites. As it affects the oxygen carrying capacity

of the blood, low oxygen saturation in the water will increase the toxicity of the nitrites. If plenty of oxygen is available the effects of the nitrite are lessened. The amount of chlorides (Cl<sup>-</sup>) in the water can also affect the toxicity of nitrite. Chloride ions prevent the uptake of nitrite by the blood of the fish. Levels as low as 25ppm can be an effective treatment for nitrite levels of 1ppm.

In general it is very important to monitor the ammonia, nitrite and nitrate levels in any aquarium. There are a lot of factors to consider when diagnosing any problems encountered. This is especially important in new systems that have not fully cycled giving the beneficial bacteria time to establish. Commercial bacteria boosters are available to speed this process. Your best line of defense against either of these problems is regular testing and water changes. There water treatments that will neutralize ammonia and small amounts of salt can be added to reduce the effects of nitrite but each situation is different. Check with your water quality specialist in each instance to determine the best course of action for your particular system.

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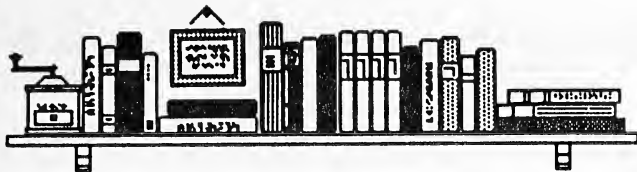
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Each month we will also be answering a few questions from you. We will try to pick questions that are pertinent to that month's topic. We also welcome feedback from the readers. Questions and comments can be submitted to us by email at: Dan: dconklin@flaquarium.org/ Kevin: kshelton@flaquarium.org/ Bruce: belkins@indy zoo.com/ Or by mail at: Kevin Shelton, The Florida Aquarium, 701 Channelside Drive, Tampa, FL 33602



# Book Review

## **The AZA Field Conservation Resource Guide**

Edited by William G. Conway, Michael Hutchins, Michael Souza, Yula Kapetanakos,  
and Ellen Paul – 2001

AZA Publications Dept., 8403 Colesville Rd., Suite 710

Silver Springs, MD 20910

Soft cover 323 pp.

Price: \$25 Members/\$35 Non-members

*Review by Denise C. Wagner, Senior Mammal Keeper  
San Diego Wild Animal Park, Escondido, CA*

It has become obvious to the zoo and aquarium community in the last twenty years that in order to conserve animals and plants we must step beyond the boundaries of our institutions and take an active part in field conservation if we are to have any impact on saving nature. At least this is what the American Zoo and Aquarium Association or AZA is advocating in the introduction to their *Field Conservation Resource Guide*, and they are not wrong in that assertion. However, taking on a field conservation project can be a daunting task for an institution. This is where this book can serve as a guide. It describes various ways that institutions can become involved in field conservation.

The book is divided into seven major topics or approaches to field conservation. Those listed are: Field Research and Conservation, Education, Partnerships, Sociocultural Issues, Training, Ecotourism, and Fund-Raising and Public Relations. An expert on the subject introduces each section, and descriptive examples of field conservation programs follow. Program descriptions include an introduction to the project and discussions regarding the overall costs and benefits derived from the project. Conclusions are drawn as well for each program. There are over 40 different field conservation programs detailed. Topics covered extensively can be found in the Field Research and Conservation, Partnerships, Training, and Fund-Raising and Public Relations chapters. The areas of Education, Sociocultural Issues, and Ecotourism have relatively few examples to draw from. It is probable that these topics are not covered as extensively because these are relatively new areas in field conservation and many programs have not yet been established that address these topics. Programs detailed range from those that conserve individual species to those that conserve habitats. The reader should be able to find data on a field conservation program from which they can draw inferences and information.

This book is not a how-to book, nor is it meant to be. It is also not exhaustive in its coverage of field conservation programs. It is exactly what its title claims; it is a resource guide. As such, those institutions that are looking to expand their horizons and leap into the field of *in situ* conservation will find this book valuable. Institutions will benefit from the experiences of other institutions through the successes and mistakes detailed here.

## **3<sup>rd</sup> Edition Birds of Prey, Health and Disease**

Edited by John E Cooper

Iowa State University Press 2002

2121 S. State Avenue, Ames Iowa 50014

Hardback 384 pages, 8 page color plate section \$96.95

*Review by Christine Clark, Educator  
Beardsley Zoo, Bridgeport CT*

Birds of Prey, Health and Disease is a reference book suitable for use by veterinarians, academics, biologists, falconers, zoo personnel, rehabilitators and field conservationists. It is written in textbook

form using medical and technical terminology with abundant references. In this, Cooper's 3<sup>rd</sup> edition, (1st published 1978, 2<sup>nd</sup> published 1985) the reader finds a comprehensive and detailed account of vet care specific to raptors.

Cooper, a multi-degreed vet and lecturer, now makes his living as an independent consultant. He specializes in, "diseases and pathology of non-domesticated and wild species including birds and lower vertebrates, mini-livestock, sustainable development, conservation, zoonoses, tropical diseases, and the role of animals in health, education and research". He has worked mostly in his native England but has spent many years working with wild and captive birds of prey in Africa. In this book Cooper aims to provide a resource which standardizes diagnosis, treatment techniques, and data collection so that individuals might "work together productively" to advance the health and care of both captive and free-living birds.

This text is divided into 15 chapters with 11 appendices. It is laid out in an organized and logical manner, starting with the history of raptor medicine. Cooper then includes chapters on nomenclature, anatomy, and methods of investigation and treatment before discussing diseases, pathology, anesthesia and surgery. By doing so the non-vet reader first receives a lesson in the basics of raptor care. This information is paramount to understanding the latter chapters. Cooper also includes much information from the first raptor specialists, falconers. Throughout the book he refers to terms and treatments falconers have used for centuries. This includes such terms as "frounce, croaks and cramps" as well as the use of honey to draw out infection on lacerations.

The latter chapters cover non-infectious disease, infectious disease, parasitic disease, foot conditions, etc. including diagnosis, treatment and prognosis. Cooper concludes with a short summary on the relevance of raptor health to the various disciplines that might use this book. The appendices also prove quite useful as a reference tool. Examples of clinical exam and protocol forms for live, post mortem and egg/embryo observation are given. Also included are a key to major clinical diagnoses, a list of medicines and other agents used in treatment, and an equipment and protocol list for fieldwork.

While this book has very useful information for the raptor professional, including rehabbers and zoo staff, it is not for the layman or general raptor enthusiast. The book is written as a reference or textbook and therefore uses technical, medical and scientific language. The book is difficult to read in part due to lengthy sentences and copious footnotes peppered throughout the text. A listing of 43 pages of references and further reading is proof of the vast undertaking editing this book must have been. An endeavor Cooper has succeeded at no less than three times.

Birds of Prey, Health and Disease should be in the reference library of every professional who has the privilege of working with raptors. The information on diagnosis and treatment will allow vets to more effectively treat their patients while giving the rehabber, falconer, or zoo employee a solid background on key observations to make in the day to day care of their birds.

## MOVING?

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# Effective Use of Interns for Enrichment and Research at the Smithsonian National Zoological Park

By

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After nearly 30 years of discussion and research on environmental enrichment, provisions for institutional enrichment programs have made their way into accreditation requirements for the American Zoo and Aquarium Association (AZA). Currently, the questionnaire to be completed by the institution seeking accreditation asks only if the institution has an environmental enrichment plan and who at the institution is responsible for implementation of that plan. However, during site visits AZA inspectors may ask to see copies of the enrichment plan and documentation that it is being implemented. An environmental enrichment plan for a taxon in the collection is likely to be most successful if it is reviewed regularly to evaluate its effectiveness.

Determining the effectiveness of environmental enrichment can take different forms that vary in amount of time and labor involved. All forms of evaluation require that clear and specific goals of the enrichment have been outlined previously and that staff are aware of them. Enrichment may be evaluated simply using observations recorded in daily reports. This method of evaluation is the least labor intensive, but likely provides the least information since it represents only a snapshot (one day) in time. In addition, these data may require significant time down the road to locate and summarize, and there is no standardization across individuals in what constitutes "effectiveness".

A second method of evaluation involves using an ordinal (i.e. 1 to 5) scale to evaluate how effective the enrichment was at attaining the goals set for the animal(s). This method requires the keeper team to determine in advance the criteria for each score in the scale, in other words to determine what constitutes a "1", "2", or "3" and so on. These scores can be entered on specially designed tally sheets such that the scores for a period of time, a month for example, can be reviewed quickly. This method also lends itself to more quantitative analysis (i.e. calculation of mean scores for individual animals or classes of enrichment).

A third method of evaluation is formal scientific study. While these studies can take a number of forms, they often involve collection of data before, during, and sometimes after enrichment sessions. Data are collected according to specifically designed protocols for the study and are usually based on an ethogram of behaviors of interest (i.e. feeding, resting, pacing, scent marking, etc.). The data collected during the study can then be analyzed statistically or graphically and shared with others. This method does provide the most detailed and quantitative data of the three methods we've discussed. However, this evaluation method is clearly the most labor intensive, and we do not recommend it for all on-going enrichment efforts in the institution. Formal scientific study can be useful though when faced with "enrichment challenges", such as animals that are not responding to enrichment. Data on specific behaviors may be also more useful in tailoring enrichment programs than scores from a scale.

At the National Zoological Park, we have used formal scientific study in two cases to design and assess enrichment programs for small carnivores using student interns from a local high school. Both of these studies required time and labor beyond what the keeper staff could spare. However these projects were ideally suited for high school interns needing to do science projects as part of their curriculum at school. Keepers in the small mammal unit were contacted by students about the possibilities of doing collection-based research at the zoo to fulfill their academic requirements. Interns then met with keepers and research staff to discuss research topics and outline methods. Students usually worked at the zoo 12 to 15 hours per week for eight months. In addition to working

on their research projects, interns also participated in husbandry, exhibit renovation, and record keeping activities.

The first study sought to determine what enrichments worked best with some “enrichment challenge” animals. The student collected more than 100 random hours of baseline and experimental observations for each animal. By using a simple camcorder and video cassette recorder the student was able to film the animals’ behavior at all times of the day. She used a standardized ethogram to transcribe and record the observed behaviors of the animals. Working with the animal keepers, the student researched and developed a list of enrichment items that were given to the animal over the course of five weeks. Each item was assessed for the length of animal interaction and its effectiveness using a simple spreadsheet application and statistics. This study allowed the keepers to develop an enrichment plan for targeted animals using the most effective enrichment items.

In the second study, we were interested in determining how often enrichment should be provided in order to reach our behavior goals. Using potential enrichment items identified in the previous study, we chose to investigate three possible intervals of enrichment delivery – every other day, once a day, or twice a day. Using observation techniques similar to the original study, the student collected over 100 hours of observations with enrichment given at the different intervals. The results of this study were somewhat surprising. We found that there was not a significant difference in the effectiveness of enrichment given in any of the three intervals. This information was useful in further refining our enrichment plans.

Since these original studies, we have used high school interns in three new projects that targeted additional “enrichment challenge species”, auditory enrichment, and nocturnal behavior (we learned through the earlier studies that two improperly wired plant lights were leaving some exhibits lit throughout the night). One important element of all of these studies was the use of a standardized ethogram. The standardization of collected data has allowed the use of previously recorded data in new studies and allowed us to revisit the findings of original observations. Since beginning these studies, we have collected and recorded over 500 hours of animal behaviors within our collection. The research conducted by the interns was beneficial to the zoo in helping to deal with enrichment challenges and in designing enrichment plans within the small mammals unit. Though the data were not publishable due to small sample sizes, it was nonetheless a very useful exercise for both staff and interns. In addition to providing answers to enrichment-related questions, interns also contributed free labor to the unit, and keepers were able to educate the interns about their occupation. Interns received formal training in the scientific method and got the data they needed for their school projects. However, they also gained valuable experience with zoo animal husbandry. Husbandry interns need not be directly involved in shifting of animals but can be used in diet preparation, exhibit renovation, cleaning, enrichment manufacture, and record keeping. In most cases, a formal internship program is required in order for interns to receive workman’s compensation benefits. Human resources staff or volunteer coordinators should be able to assist with getting interns registered for the program and covered.

Local colleges and universities are also a good source of interns. Some courses require research projects for credit, and many students will be looking for “research experience” to include on their resumé’s. These interns will have more biology background and may already be familiar with some research methods. In addition they may be able to perform more complicated data analyses and carry some projects through to publication or conference presentations. College interns are typically able to devote more hours to working at the zoo and often over a longer period of time.

A recent intern from Georgetown University conducted a study of bamboo preferences in our pair of giant pandas for her senior thesis in biology. The results of her research were later presented at a formal scientific meeting. During her project, she was able to interact with keepers, curators, research staff, nutritionists, and horticulturists; thus, she was able to get a more in-depth understanding of zoos and exposure to various career options within the zoo field. Most keeper positions in zoos require some previous experience working with animals. Unpaid internships in zoos, whether based on research projects or husbandry tasks, can provide some of this initial experience and give students insight into potential career options in the future.



**Chapter Logo Registry Project Reveals  
Several Newly Adopted Chapter Logos**

A number of our AAZK Chapters have recently adopted new logos. They are presented below. As we receive new and updated logos from AAZK Chapters, we will present them here in Chapter News Notes. *Ed.*

**AAZK New Bedford Chapter**

**Designer:** Keeper Staff at Buttonwood  
Park Zoo  
**Adopted:** May 2002



**Rosamond Gifford Zoo AAZK**

**Designer:** Various Chapter members  
**Adopted:** 2002



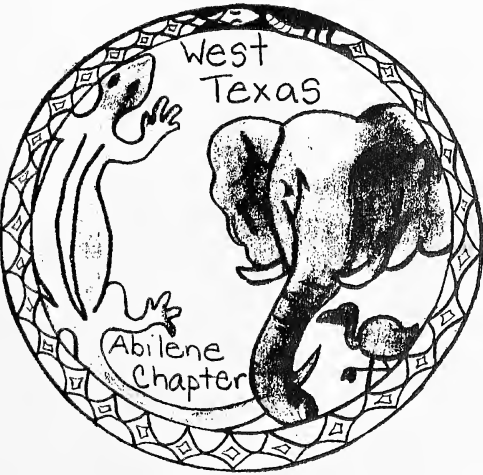
**Fort Worth Zoo AAZK Chapter**

**Designers:** Meg Bommarito and Ellis Connor  
**Adopted:** 2000



**West Texas AAZK Chapter**

**Designers:** no information supplied  
**Adopted:** no date supplied



## North Carolina AAZK Chapter

**Designers: Betsy Powell**

**Adopted: June 4, 2002**

**The significance of the components of their new logo are:**

- 1) The Red Wolf - "The Red Wolves of Alligator River" website**
- 2. The Elephant - "The Elephants of Cameroon" website**
- 3. The globe shows North America and Africa - the two continents represented at the North Carolina Zoo.**

### Assiniboine Park Zookeepers Association

Newly elected officers for the Assiniboine Park Zookeepers Association, Winnipeg, Manitoba, Canada are:

President.....Janice Martin

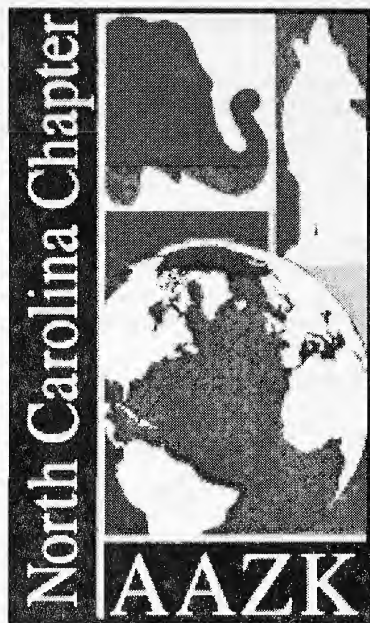
Vice President.....Mike Nocei

Secretary.....Heather Parry

Treasurer.....John Toothill

Our Chapter provided a fee for service with the Zoological Society to help with their annual Membership Night. We used these proceeds to pay our members' AAZK renewals.

--John Toothill, Treasurer



*Committed to Conservation*

### Association Welcomes New Chapter

AAZK, Inc. is pleased to welcome the Ozarks Chapter located in Springfield, MO. Chapter members come from the Dickerson Park Zoo, National Fish and Wildlife Museum and Wonders of Wildlife.

Newly elected officers are:

President.....David Illig

Vice President.....Erik Scheidegger

Secretary.....Erin Sorensen

Treasurer.....April Horton

Chapter Liaison.....Steve May

## **LAST CHANCE**

### **Have You Sent in Your Chapter Logo Update?**

A notice was sent to every Chapter requesting verification of the logo we currently have on file for their Chapter; or requesting submission of a newly adopted logo for inclusion in the 2002 edition of the AAZK Chapter Logo Registry. Chapters submitting new logos should send a clear, clean copy along with information on the designer and the date the logo was adopted. Logos may be sent on disk as JPEG or TIFF files. When mailing, DO NOT fold the logo. If you have not sent in your response, please do so ASAP. If, for whatever reason, you did not receive a logo request packet from AAZK/ AKF, call Susan Chan at 1-800-242-4519 to request one. Chapters that do not respond will be represented by the most recent logo we have in our file for them in the upcoming Logo Registry.

Send to: Logo Registry, AAZK, 3601 SW 29th St., Ste. 133, Topeka, KS 66614-2054.

# ***Resources for Crisis Management in Zoos and Other Animal Care Facilities***

*Resources for Crisis Management in Zoos and Other Animal Care Facilities* - edited by S.D. Chan, W.K. Baker, Jr. and D.L. Guerrero. ©1999 ISBN #1-929672-02-0

This reference work is an anthology of articles by authors from zoo keepers to veterinarians to zoo directors to public relations specialists. The works of 56 authors from these diverse zoological perspectives brings together information and resources for planning a crisis management program for your facility or for augmenting an existing program. The 424-page volume includes a foreward by Sydney J. Butler, Executive Director of the American Zoo and Aquarium Association.

The book's chapters are arranged by the following subject topics: Factors That Influence Crisis Management in a Zoological Setting; Developing An Emergency Preparedness Plan; Emergency Response and Crisis Management Teams; Public Relations and the Crisis Situation; Animal Restraint and Animal Identification Techniques; Dealing with A Crisis Situation (Zoological Crisis, Natural Disasters, and Manmade Disasters); Injury and Death at the Zoo; and Taxon-Specific Crisis Management Protocols. This important work also includes an extensive Appendix and a listing of suppliers and equipment vendors. AAZK has gathered the best of existing articles on crisis management and expanded the text with originally solicited materials on Zoonotic Disease: Risk Appreciation and Biosafety, Meteorological Aspects of Disaster Planning, The Weapons Response to a Zoological Crisis Situation, The Process of Exhibit Design and Construction: How It Affects Crisis Management, etc. The book includes the results of the first-ever North American Crisis Management Survey as well as Case Studies showing how zoos reacted in various crisis situations and what was learned from their experiences. A must for every zoo professional!

To order fill out the form below and return with your payment to: AAZK, Inc., CMR, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 U.S.A. Checks and money orders should be made payable to: "AAZK, Inc." (U.S. FUNDS ONLY). If using a credit card, make sure to complete all requested information on form. Prices are: AAZK Members \$45.00 Non Members \$60.00. Prices include domestic Book Rate Postage. Orders outside the continental U. S. should add \$15.00 for parcel post surface shipping.

## **Crisis Management Book Order Form**

I wish to order \_\_\_\_copy (ies) of *Crisis Management Resources*

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This Form may be photocopied to facilitate order. Credit card orders may be placed by calling 1-800-242-4519 (US) or 1-800-468-1966 (Canada)

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 10th of each month to: Opportunity Knocks/AKF, 3601 SW 29th St., Suite 133, Topeka, KS 66614-2054. Please include closing date for positions available, and when setting these dates keep in mind that because of bulk-mail, most readers do not receive their AKF until the middle of the month or later. There is no charge for this service and fax or e-mail listings of positions which become available close to deadline are accepted. Our Fax is (785) 273-1980; e-mail: akfeditor@zk.kscoxmail.com< We are no longer located at the Topeka Zoo, so please note new address to avoid delays in processing.*

**Zoo Keeper...**we are looking for an energetic person with paid zoo experience to help take care of a collection of over 130 species of mammals, birds and reptiles. The candidate should have a degree in an animal-related field, and have had hands-on experience. This person would be required to do animal talks to a large audience, and interface with the casual visitor. The ability to get along with others is a must. We offer a salary commensurate with background, and also paid sick days. Send a resumé to: Vince Hall, Claws 'N' Paws Wild Animal Park, Ledgerdale Road, Lake Ariel, PA 18436.

**Chimpanzee Caregiver...**The Primate Foundation of Arizona is currently accepting applications for the position of Chimpanzee Caregiver. Requires two (2) years of college-level course work and two (2) years experience in the care of exotic animals. An equivalent combination of education and experience which provides the required knowledge, skills, and ability will be considered. Primate experience a plus. The position does require heavy lifting, an applicant must be able to lift and carry objects weighing up to 60 pounds. Caregivers assist in the responsibility of caring for approximately 75 chimpanzees (*Pan troglodytes*). Must be willing to work weekends and holidays, and make at least a two-year commitment. Excellent benefits. E.O.E. Applicant must have a negative TB skin test and evidence of a measles booster or natural disease prior to employment. Send letter of interest (with requested salary), resumé and three (3) letters of reference to: Jim Murphy, Colony Manager, Primate Foundation of Arizona, P.O. Box 20027, Mesa, AZ 85277-0027. **Position open until filled.**

**Naturalist...**professional, part-time, contractual position at Trout Lake Nature Center in Eustis, FL involving instruction of environmental programs (K-HS), coordination of education, volunteers, grant writing, development & implementation of family-oriented programming. BA/BS in environmental studies, biology, science education or related field and two (2) years experience. Excellent written and verbal skills, dependability and flexibility a must. Salary \$19,800.00/year. Submit resumé and cover letter to Lake County Water Authority, 107 N. Lake Ave., Tavares, FL 32778. Open until filled.

**Alaska SeaLife Center Internship** (Animal Husbandry - Avian Department)... The Alaska SeaLife Center, a non-profit organization in Seward, Alaska, is accepting applications for internship opportunities in the avian department. The Alaska SeaLife Center is dedicated to understanding and maintaining the integrity of the marine ecosystem of Alaska through research, rehabilitation and public education. This is a full time position for twelve weeks, available year-round. This position introduces basic animal care and husbandry techniques; duties include (50%) assisting in the daily care and maintenance of the Center's avian collection and (50%) assisting the Education Department. Applicants must be currently enrolled in an accredited college or university with a primary area of study in Biology, Zoology, Psychology or other animal related field. Recent college graduates may also apply. Applicants must have the ability to communicate effectively; understand and follow written and oral instruction; have a good sense of balance in order to maneuver around the exhibits and holding areas; able to lift 40 pounds; able to adapt to an ever-changing work environment; and available to work weekends and holidays. Public speaking skills are highly encouraged. This is an unpaid position, housing and/or a food stipend may be available for a limited number of candidates. Interns are responsible for all travel expenses. Inquire with Annette D'Alessandro, Intern Coordinator, Alaska SeaLife Center, P.O. Box 1329, Seward, AK 99664; Phone: (907)224-6343 Fax: (907)224-6320, Web Site: [www.alaskasealife.org](http://www.alaskasealife.org)

*Positions posted with AAZK, Inc. may also be found on  
our website at [www.aazk.org](http://www.aazk.org)*

*Also, you may want to check out the AZA Member Institution job listings  
at <http://www.aza.org>*

AAZK Membership Application

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Mail this application to: AAZK Administrative Offices, 3601 S.W. 29th, Suite 133 Topeka, KS 66614. Make checks/money orders payable to AAZK, Inc. Must be in U. S. FUNDS ONLY. Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.

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**American Association  
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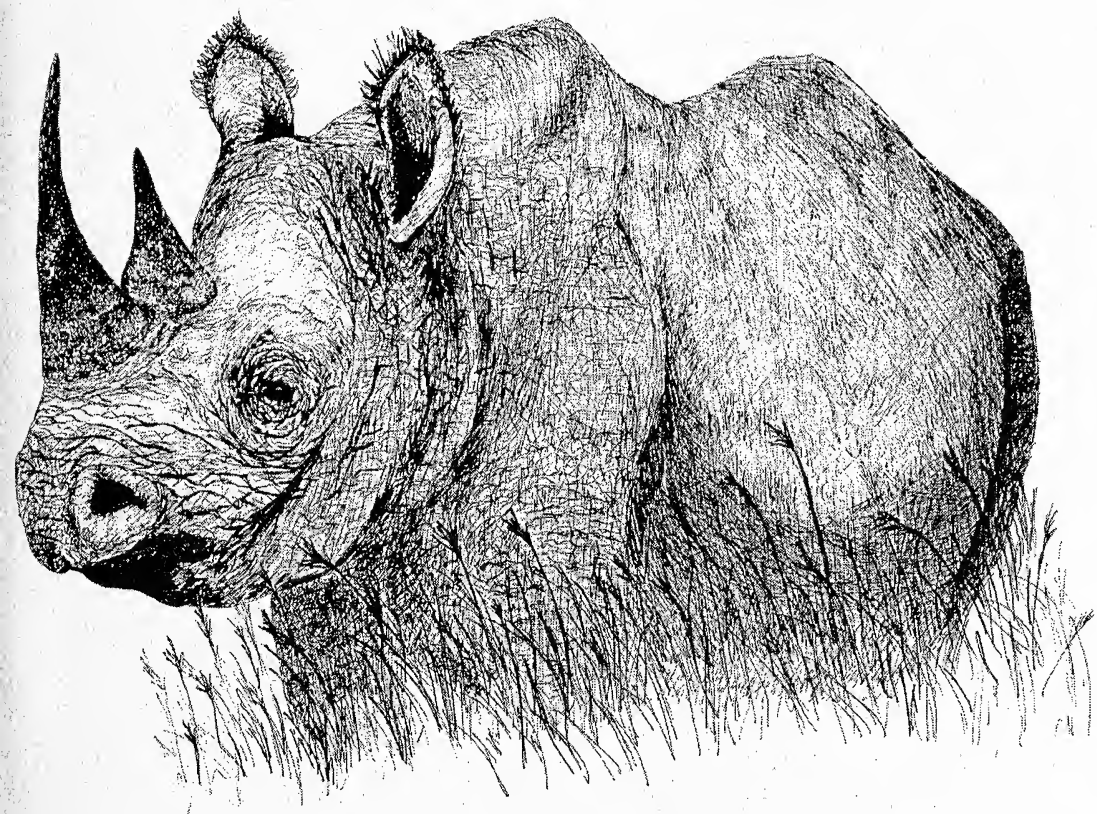
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**Animal Keepers' Forum  
25th Anniversary  
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# **ANIMAL KEEPERS'** **F O R U M**



**The Journal of the American  
Association of Zoo Keepers, Inc.**

**SEPTEMBER 2002**

**Managing Editor:** Susan D. Chan • **Associate Editors:** Gretchen Ziegler, Sequoia Park Zoo & Kayla Grams, Lovell, WY • **Enrichment Options Coordinators:** Jan Roletto, Arcata, CA & Dawn Neptune, Utah's Hogle Zoo • **Legislative Outlook Column Coordinator:** Georgann B. Johnston, Sacramento, CA. • **ABC's Column Coordinator:** Diana Guerrero, Big Bear Lake, CA • **Reactions Column Coordinator:** William K. Baker, Jr., Little Rock Zoo • **The Water Column Coordinators:** Dan Conklin and Kevin Shelton, The Florida Aquarium and Bruce Elkins, Indianapolis Zoo

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**AAZK Executive Director:** Ed Hansen, AAZK, Inc., Topeka KS  
also serves as AAZK Liaison to the American Zoo & Aquarium Association

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#### **Bowling for Rhinos**

Chair - Patty Pearthree, Cary, NC

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Chair - Janet McCoy, The Oregon Zoo

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Bob Hayes- San Diego Zoo

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Mark Levin, Elmwood Park Zoo

#### **Enrichment Committee**

Chair - Lee Houts, Folsom City Zoo

#### **Animal Behavior Management**

Beth Stark, Toledo Zoo

**International Outreach** - Jeannette Beranger, Roger Williams Park Zoo (Chair/Coordinator International Assistance);

Kathy Kelly, Silver Springs, MD - Project M.A.R.C. (Making A Realistic Contribution)

**Junior Zoo Keeper Program** *Junior Keepers' Journal* Editor: Mark de Denus, Reid Park Zoo

### **AAZK PUBLICATIONS - CONTINUING DATA COLLECTION**

Biological Values for Selected Mammals, 3rd Edition - Jan Reed-Smith, John Ball Zoo

AAZK Enrichment Notebook - Lee Houts, Folsom City Zoo



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## About the Cover.....

*This month's cover features a Black Rhinoceros (*Diceros bicornis*) drawn by Christine McKnight, a keeper at the Minnesota Zoo in Apple Valley, MN. The Black Rhino is the more widespread of the African rhinos. Living alone or in small family groups, the black rhino is a browser of foliage and is therefore found in dense or open woodland habitat. The upper lip of this rhino species is elongated and pointed, rather like a prehensile finger, which permits it to gather in leaves and branches from bushes and trees. Both sexes disperse as sub-adults and then settle into permanent home ranges. They reach sexual maturity at around five years of age. Females give birth to a single calf after a gestation of 15-17 months. Rhinos can live upwards of 50 years. Thanks, Christine!*

*Animal Keepers' Forum* publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Authors are encouraged to submit their manuscripts on a disk as well as in hard copy form. Manuscripts submitted either on disk or electronically as attachments to an email should be submitted in Microsoft WORD. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5"** (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy black and white **or** color prints (minimum size 3" x 5" [8cm x 14cm] ) are accepted. Clearly marked captions should accompany photos. Please list photo credit on back of photo. Photographs may be submitted electronically as either JPEG or TIFF file attachments.

Articles sent to *Animal Keepers' Forum* will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for *AKF*. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone, fax or email contributions of late-breaking news or last-minute insertions are accepted as space allows. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (785) 273-1980; email is [akfeditor@zk.kscoxmail.com](mailto:akfeditor@zk.kscoxmail.com)

**Deadline for each regular issue is the 10th of the preceding month.  
Dedicated issues may have separate deadline dates and will be noted by the editor.**

Articles printed do not necessarily reflect the opinions of the *AKF* staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

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E-Mail Addresses: You may reach Barbara Manspeaker at AAZK Administrative Offices at: [aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com) You may reach Susan Chan and *Animal Keepers' Forum* at: [akfeditor@zk.kscoxmail.com](mailto:akfeditor@zk.kscoxmail.com)

**AAZK Website Address: [www.aazk.org](http://www.aazk.org)**

**BFR Website: <http://bfr.aazk.org>**

# ***Scoops & Scuttlebutt***



## **International Enrichment Conference Scheduled in South Africa**

The Johannesburg Zoo, South Africa, is proud to announce that will be hosting the Sixth International Conference on Environmental Enrichment.

This exciting and informative conference will be held from 2 – 7 November 2003. The provisional conference attendance fee is US\$250, but this will be confirmed and reduced based on price and currency fluctuations towards the end of 2002. South Africa is an exciting destination that boasts a number of world class zoos as well as a plethora of extracurricular activities ranging from phenomenal game parks to peaceful wine routes. Please ensure that you make your travel arrangements early to obtain the most reasonable flights from your country. Please bear in mind that South Africa is a cost effective destination to travel to and is well worth the visit to this amazing part of the world. Further information can be obtained from our website which will be updated regularly to keep you posted [www.jhbzoo.org.za](http://www.jhbzoo.org.za).

For further information please feel free to contact Mathew van Lierop who will be coordinating the conference at +27 11 646 2000 ext 233 or at [mathew@jhbzoo.org.za](mailto:mathew@jhbzoo.org.za)

See you there!

## **KC Conference to Include Australasian Workshop**

We will be having the Australasian Workshop again this year at the conference. We will be discussing AZA updates, field research, publications and new macropod case histories to name a few. If you have topics for discussion please contact: Jacque Blessington at (816) 513-5700 ext. 25703 or email at [Jacsprat65@aol.com](mailto:Jacsprat65@aol.com)

## **Treeroot Husbandry Manual Now Available**

The newly revised edition of the Tree Kangaroo Husbandry Manual is now available. You can make your orders by contacting: Valerie Thompson, Zoological Society of San Diego, P.O. Box 551, San Diego, CA 92112-0551; Phone: 619-685-3226; Fax: 619-232-4117; email: [Vthompson@sandiegozoo.org](mailto:Vthompson@sandiegozoo.org)

Make checks for \$25 payable to AAZK KC TKSSP. Mail to: Jacque Blessington, Kansas City Zoo, 6700 Zoo Drive, Kansas City, MO 64131.

A special thank you goes out to Judie Steenberg, retired keeper from the Woodland Park Zoo, Seattle, WA, for working so diligently on following through with this project, her work is much appreciated.

## **Please Note New Email Addresses for AAZK Administrative Office/AKF**

Members are asked to note that there are new email addresses for both the AAZK Administrative Offices and for *Animal Keepers' Forum*. These changes became necessary when our cable service switched from Roadrunner to their own network.

The address for Barbara Manspeaker at AAZK Administrative Offices is:  
[aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com)

The address for Susan Chan and *Animal Keepers' Forum* is:  
[akfeditor@zk.kscoxmail.com](mailto:akfeditor@zk.kscoxmail.com)

>>>Please begin using these new addresses immediately<<<

### **Nutrition Advisory Group Announces Website and Proceedings Sales**

The Nutrition Advisory Group is happy to announce the new NAG website. It is located at <http://www.NAGonline.net> (note the .net extension). Currently, the site contains information about the NAG, husbandry manual nutrition chapters, the published NAG technical papers and other nutrition resources. We hope that you will find the site a valuable resource.

We are also pleased to announce that the NAG proceedings from 1999 and 2001 conferences are now available for purchase. The ordering information is on the web site ([www.nagonline.net](http://www.nagonline.net) under "nag conference"). There is a form that can be printed out and mailed with your payment to Mike Maslanka (address on the form). The cost is \$30 per copy plus \$4 per copy shipping in the US. There is also a table of shipping costs to many other countries. If you are ordering multiple copies of the same proceedings to the same address, we may be able to offer a reduction on shipping. E-mail the address shown on the web site for more information.

The proceedings from the 1995 and 1997 conferences are out of print and cannot be ordered. We hope to make these available on the web site sometime this autumn/late this year. --submitted by Wendy Graffam, Ph.D., NAG web site facilitator.

### **Enrichment Online Website Announced**

The Fort Worth Zoo, in conjunction with the American Institute of Biological Sciences, is proud to announce that the Enrichment Online website is now active and available to animal managers worldwide. The key component of the site is a search engine for taxa-specific enrichment ideas. In addition to accommodating detailed searches for enrichment items, the database is interactive and allows users to input their own ideas and provide comments on items already in the database. We have already received registrations from France, Australia, Kuwait and Venezuela.

Supplemental materials on the site include hot links to other enrichment-related web sites, a list of periodicals and published materials, and a detailed Help section. We hope users will find this a comprehensive and valuable resource for integrating enrichment into the management of captive animals in both zoos and laboratories.

Log on today and share your enrichment ideas with colleagues from around the world at [www.enrichmentonline.org](http://www.enrichmentonline.org)

### **Proposed By-Laws Changes Notification**

During the year 2001-2002, the Board of Directors and the By-Laws Committee reviewed the National by-laws to determine if there were any changes that needed to be made and voted on. These are the areas found that needed changes. Please review and be prepared to vote on these changes during the General Meeting at the National AAZK Conference in Kansas City, MO from 6-10 October 2002.

Article I (Offices), Section 1 (Principle Office), sentence 1, currently states "The Principle Office for the transaction of business of the Association is hereby located at 635 S.W. Gage Blvd., Topeka, KS 66606-2066." The sentence should now state: "The Principle Office for the transaction of business of the Association is hereby located at 3601 S.W. 29th St., Suite 133, Topeka, KS 66614-2054."

Article II (Officers and Board of Directors), Section 1 (Board of Directors), sentences 3 and 4, currently states "The Immediate Past President shall serve as *ex-officio* member of the Board without the right to vote and shall serve as the Secretary to the Board of Directors. The President of the Association shall be elected by Executive Committee appointed by the Board of Directors in a policy detailed in the Operations Manual of the Association." Those sentences shall now read: "The Immediate Past President shall serve as *ex-officio* member of the Board without the right to vote. The President and Vice President of the Association shall be elected by Executive Committee appointed by the Board of Directors in a policy detailed in the Operations Manual of the Association."

Article VI (Committees, Coordinators, and Advisors), Section 2 (Standing Committees), sub-section "Ethics", sentence 2, currently states "Appointments to the Committee shall occur every two(2) years and are made by the Board of Directors." That sentence should now read: "Appointments to the Committee are made by the Board of Directors."

--Submitted by Gisela Wiggins, By-Laws Committee Chair  
The North Carolina Zoo, Asheboro, NC

# Coming Events

**Association of Zoo Veterinary Technicians 22nd Annual Conference** - 1-6 October 2002 in Milwaukee, WI. Meeting topics include microbiology wetlab, zoo animal dentistry, lab techniques and procedures specific to exotic species, and case studies of traditional zoo and aquatic animals. Will include pre-conference tour to International Crane Foundation. For more information contact: Margaret Michaels of the Milwaukee Zoo at (414) 256-5441; fax (414) 256-2522 or email at [MMICH@excepc.com](mailto:MMICH@excepc.com) or check out the website at [www.azvt.org/](http://www.azvt.org/)

**American Association of Zoo Veterinarians** - 6-10 October 2002 in Milwaukee, WI. Program sessions include Reptiles and Amphibians, Avian Medicine, Hoofstock, Carnivores, Primates, Case Reports, Aquatic Animals, Pathology, Conservation Medicine, Emerging Diseases, Reproduction and Contraception, Behavior, Enrichment and Conditioning, and Biomaterial Banking. There will also be a poster session, veterinary and graduate student paper competitions, and workshops/wet labs.

For information regarding presentations of papers, please visit our website at [www.aazv.org](http://www.aazv.org) or contact Randy Jung, DVM, St. Louis Zoo, Forest Park, St. Louis, MO 63110; Phone (314) 768-5487; Fax (314) 768-5454; E-mail [rjunge@aol.com](mailto:rjunge@aol.com)

For additional conference information, please contact Wilbur Amand, VMD, Executive Director/AAZV, 6 North Pennell Rd., Media, PA 19063; Phone (610) 892-4812; Fax (610) 892-4813; E-mail [AAZV@aol.com](mailto:AAZV@aol.com)

On Friday, 11 October 2002, The American Veterinary Medical Association will hold its annual Animal Welfare Forum, this year titled "Welfare of Zoo Animals" in conjunction with the AAZV meeting. For more information contact Darci Reagan at the AVMA at 1-800-248-2862 ext 211 or [dreagan@avma.org](mailto:dreagan@avma.org)

**Joint National AAZK/AZH Conference** - 6-10 October 2002 in Kansas City, MO. Conference site is Westin Crown Center. For further information watch for announcements in *AKF* or visit the conference website at [www.aazkazh2002.org](http://www.aazkazh2002.org)

**The Zoo Registrar Association 2002 Conference** 10-12 Oct 2002 - in Wichita, Kansas, U.S.A. and hosted by Sedgwick County Zoo. Hotel will be the Wichita Marriott Hotel, reservations Number: (800) 610-0673 (available 8:00-5:30 Central time, Mon-Fri.). For more information please contact Conference Chairperson Aletha Kinser, Sedgwick County Zoo, [registrar@scz.org](mailto:registrar@scz.org) (316) 942-2213 ext. 203, Program Chair Paul Plouderback, Tulsa Zoo and Living Museum, [Plouderback@ci.tulsa.ok.us](mailto:Plouderback@ci.tulsa.ok.us) (918) 669-6225 or visit the ZRA website: <http://www.zra.homestead.com/> This is an excellent chance to meet and network with other zoo registrars. The program will be records, permitting and animal shipping oriented. There should be an ISIS representative present.


**The Ninth North American Crane Workshop** - 21 to 25 January 2003 in Sacramento, CA. Plans for the workshop include an ice-breaker on Tuesday evening, technical sessions on Wednesday and Friday, and an all-day field trip on Thursday, with an awards banquet on Friday evening. For more information contact Tom Hoffmann, NACWG Treasurer, at [Thoffmann@hoffmanns.com](mailto:Thoffmann@hoffmanns.com)

**Eleventh Annual International Association Of Avian Trainers and Educators Conference** - 12-15 February 2003 in Portland, OR. Hosted by the Oregon Zoo and held at the DoubleTree-Lloyd Center Hotel. For more information contact Cathi Wright ([wrightc@metro.dst.or.us](mailto:wrightc@metro.dst.or.us)) or Shannon LaMonica ([lamonicas@metro.dst.or.us](mailto:lamonicas@metro.dst.or.us)) or call them at (503) 220-5713.


**First International Conference on Zookeeping in 2003** - The Netherlands - Will be held between 2-10 October at Birdpark Avifauna. For further information please visit: <http://cs.geocities.com/jxarles20>

**Sixth International Conference on Environmental Enrichment** - 2-7 November 2003 in Johannesburg Zoo, South Africa. The provisional conference attendance fee is US\$250, but this will be confirmed and reduced based on price and currency fluctuations towards the end of 2002. South Africa is an exciting destination that boasts a number of world class zoos. Further information can be obtained from our website at [www.jhbzoo.org.za](http://www.jhbzoo.org.za) Please feel free to contact Mathew van Lierop who will be coordinating the conference at +27 11 646 2000 ext 233 or at [mathew@jhbzoo.org.za](mailto:mathew@jhbzoo.org.za)

**NOTICE:** The International Scrow Summit/the 2nd Symposium on Capricornis and Related Species, originally planned for 2002 by the Japan Scrow Center has been delayed until the Fall of 2004. Details will be published as they become available.



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# AAZK Announces New Members

## New Professional Members

John Brown and Robert Myler, **Chehaw Wild Animal Park (GA)**; Mara Dombrowski, **Central Florida Zoo (FL)**; Mauricio Saldarriaga, **Miami Metrozoo (FL)**; Mary Rich, **Nature's Classroom (FL)**; Marc Holland, **Ober Gatlinburg Black Bear Habitat (TN)**; Audra Sharp, **Indianapolis Zoo (IN)**; Jennifer Goode, **Detroit Zoo (MI)**; Shane D. Elsinger, **Henry Vilas Zoo (WI)**; Sarah Christeson, **St. Louis Zoological Park (MO)**; Sam Beard, Alicia Boor and Jason Usetecka, **Brit Spagh Park and Zoo (KS)**; Robert Volt, **Folsom Children's Zoo (NE)**; Chad Ickert, **Dallas Zoo (TX)**; Stephanie Bolster, **Ft. Worth Zoo (TX)**; Bryan MacAulay, **Out of Africa Wildlife Park (AZ)**; Stacey Feige, **International Exotic Feline Sanctuary (TX)**; Nicole Gualtieri, **Zoo to You (CA)**; Sean Ellis and Tammy Moroz, **Assiniboine Park Zoo (Manitoba)**.

## Renewing Contributing Members

David R. Morris, President  
ZuPreem, Mission, KS

Marilyn R. Lemrow, Patron  
Zoological Society of San Diego  
San Diego, CA

Fran Olson  
Elgin, IL

Deborah Burch  
Miami, FL

## Renewing Institutional Members

SeaWorld Aviculture  
Sea World Orlando  
Orlando, FL

# WOLF NOTES FROM THE FIELD

## Judge Bans Sawtooth Wolf Killing

A federal judge has ruled that wolves in Idaho's Sawtooth N.R.A. can no longer be killed, even for preying on livestock reports the Western Watersheds Project. According to the WWP the decision is "the first time a federal judge has ordered a stop to the killing of wolves" and comes only after "Every pack in the White Cloud Mountains, some of Idaho's wildest country has been destroyed." Eleven wolves in the Whitehawk Pack were killed in April 2002 and the White Cloud and Stanley Basin wolf packs were eliminated in 2000 and 2001.

## Killing Wolves to Save Them

For the USFWS official in charge of reintroducing wolves to central Idaho, the decision to destroy the Whitehawk pack this past spring was a necessary evil to "make good" on a deal whereby "ranchers and local politicians had acquiesced to the reintroduction only if federal wildlife managers agree to kill wolves that could not be otherwise persuaded to leave livestock alone" says the *L.A. Times*. Federal officials working on reintroduction "believe that killing individual wolves with a taste for livestock is essential to ensuring the long-term existence of wolves as a species in the Northern Rockies, where many people remain dedicated to their demise."

## Mexican Wolf Reintroduction Update

Seven of the eight free-ranging packs of Mexican gray wolves are believed to be "denning" in areas of Arizona and New Mexico, although confirmation of litters and other details won't be available until the pups are older says the USFWS. Although there have been no "incidents" to report, F637 from the Bluestem Pack was captured in a leg hold trap on 7/15 and removed from the wild for "inappropriate behavior." A reward of \$15,000 is still being offered for information on the shooting deaths of three wolves last fall and investigations into the killing of four other Mexican wolves continue.

## Wyoming Wolves Targeted

Calling them a "chronic problem pack," federal wildlife managers have "killed two troublesome wolves" from Wyoming's Washakie Pack and are "attempting to kill two others that continue to menace livestock" says the *Billings Gazette*, AP 7/28. Over the last two years, the pack of about a dozen adults plus pups has killed three calves and, unfortunately for them, remained in a valley where one of the landowners is "locked in a lawsuit with the federal government over the problems wolves create for him."

Source: *GREENlines Issue # 1667 7/23/02 and #1675 8/2/02 The Endangered Species Coalition*



## nutritional components

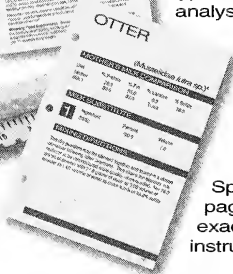
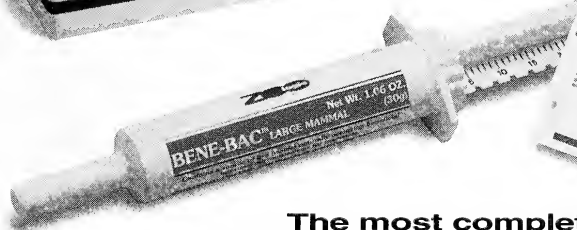
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## **AAZK Logo T-Shirts & Sweatshirts**

The Little Rock AAZK Chapter has AAZK logo T-shirts and sweatshirts available for sale. The AAZK logo is located on the left front pocket area of all shirts.

T-shirts are available in tan, navy blue, forest green, and maroon in sizes M, L, XL and XXL. Cost is \$12.00 each which includes shipping within the U.S.

Sweatshirts are available in navy blue, forest green, grey and tan in M, L, XL and XXL. Cost is \$20.00 which includes shipping within the U.S.

For those ordering outside the U.S., please contact the Little Rock Chapter with your order request to determine best method of shipping and additional shipping costs. Please email at:  
[dthompson@littlerock.state.ar.us](mailto:dthompson@littlerock.state.ar.us)



Please send your orders to:  
Britt Thompson, Little Rock Zoo,  
#1 Jonesboro Drive, Little Rock, AR 72205.  
Make checks or money orders payable to: Little Rock AAZK.

Please include your name and full mailing address, including a phone number or email address where you can be reached in case there are questions concerning your order.



## **AZA's Professional Training Program Board of Regents Professional Training Awards**

The Consolidated Professional Training Program will be held at Oglebay Park in Wheeling, WV from 3-8 February 2003. Courses being offered this year include Managing For Success I: Career Development; Managing for Success II: Organizational Development; Conservation Education Training; Creating Successful Exhibits; Institutional Records Keeping; Population Management I: Data Acquisition and Processing; Population Management II: Data Analysis and Breeding Recommendations; and Principles of Elephant Management. Please note that both Managing for Success I and II are now five-day courses.

You can even obtain academic credit through George Mason University. All of the training programs offered in February can be taken for undergraduate credit and most of them can even be taken for graduate credit. If you decide to take a course for credit, you will be required to complete additional projects and/or more rigorous examinations. Alternatively, Continuing Education Units (CEUs) are available for any course.

Deadline for application is 1 October 2002. AZA members are given preference for admission until 18 October. There is also a special registration rate available to AZA members. In order to qualify for that rate registrants must be individual members of AZA from January to December 2003. If you are not already a member, call the AZA membership office to join at 301-562-0777, ext. 234. Or visit AZA's web site to download an application form.

In order to encourage participation in the AZA Professional Training Program, the Board of Regents makes four awards available to aquarium and zoo professionals to provide additional financial opportunities for individuals and institutions. We encourage you and your staff to apply for an award. If you have any questions please contact Alexis Weider at [aweider@aza.org](mailto:aweider@aza.org) or 301-562-0777, ext. 238. For more information and to download an application visit <http://www.aza.org/prodev/>

Each of the following awards provides funding for full tuition, lodging at the double-room rate, meals, air travel up to \$500, round trip ground transportation from Pittsburgh or Columbus to Oglebay Park, and a \$200 stipend.

### **Margaret A. Dankworth Management Scholarship:**

This award is given to a participant in Managing for Success: Career Development or Organizational Development. Successful applicants should demonstrate leadership ability or leadership potential at their present institution and a commitment to professional growth. Applicants must be AZA members employed full time in a zoo or aquarium.

### **Robert O. Wagner Professional Development Award:**

This award may be applied toward any of the AZA Professional Training courses. Applicants should demonstrate professional involvement in AZA programs or conservation activities, leadership ability or leadership potential at their present institution, and a commitment to professional growth. Applicants must be AZA members employed full time in a zoo or aquarium.

### **Diversity Advancement Award:**

This award may be applied toward any of the AZA Professional Training courses. Its purpose is to support participation in the AZA Professional Training Program by ethnic minorities who are AZA members and employed full time in a zoo or aquarium.

**International Conservation Training Award:** This award may be applied toward any of the AZA Professional Training courses. Its purpose is to promote professional training for our foreign zoological colleagues. Preference will be given to candidates who are currently involved in cooperative efforts with AZA member institutions or participating in TAGs, CAPs or SSPs. Employees of any zoo or aquarium outside the United States and Canada may apply.

# 2002 AAZK National Conference - Tentative Schedule

## Friday, Oct. 4, 2002

- Pre-Conference Tour Day 1 - Squaw Creek National Park and Safari Park
- 8:00 a.m. - 5:00 p.m. Closed AAZK Board Meetings

## Saturday, Oct. 5, 2002

- Pre-Conference Tour Day 2 - Omaha Zoo
- 8:00 a.m. - 5:00 p.m. Closed AAZK/AZA Keeper Training Course Meeting

## Sunday, Oct. 6, 2002

- 1:00-5:00 p.m. Open AAZK Board of Directors and Committee Meetings
- 8:00 a.m. - 5:00 p.m. Closed AZH Board Meetings
- 6:00 - 10:00 p.m. - Joint Ice Breaker at 18th Vine Jazz Museum

## Monday, Oct. 7, 2002

- 8:30-9:00 a.m. Opening Remarks/Welcome by Conference Committee, AAZK President Kevin Shelton, AZH President Bob Chastain, Dr. Mark Wourms, Kansas City Zoo Director
- Keynote Address - "Keeping Every Cog and Wheel: Ecoregional Conservation Across the Globe" Bob Irvin, World Wildlife Fund, Director of U.S. Ecoregional Conservation
- 10:00-10:30 a.m. - BREAK
- 10:30 a.m. - noon - Joint Paper Session
  - "Share the Vision: Respect the Differences! Collaboration and Networking Among AAZK, AZA and AZH" - Bruce Carr, AZA Director Conservation/Education
  - "Wildlands of Hope - Oh, the Places You'll Go!" - Norman Gershenz, Director Center for Ecosystem Survival
  - Dr. Ed Slauter, USDA Representative
- Noon - 2:00 p.m. - AZH Lunch
- Noon -1:30 p.m. - AAZK Lunch
- 1:30 - 3:00 p.m. - AAZK Paper Session
  - "Working with AZA's Bushmeat Crisis Task Force: Dedicating Yourself and Your Institution to Action" - Kristen Lukas
  - "The Trade in Bear Parts - Where Are We and Where Are We Going?" - Linda Wachsberg
  - "Zoo Collections of State Listed Endangered and Threatened Species" - LaNette Irby
  - "The International Outreach Committee: Building Networks for the Future" - Jeannette Bernager, AAZK IOC Chair
- 2:00-3:00 p.m. - AZH Paper - "Sustainable Zoo Horticulture - The North Carolina Zoo Model
- 3:00-3:30 - BREAK
- 3:30-5:00 p.m. - AAZK Paper Session
  - "Making a Difference with Bowling for Rhinos" - Patty Pearthree
  - "All Those Who Wander Are Not Lost" - Eric Krussman
  - "Animal Behavior Management: It's Not Just for Keepers - The Role of the Zoo Veterinarian in an Animal Behavior Management Program" - Beth Stark
  - "Creating an Effective Integration Plan for New Animal Trainers" - Angi Millwood
- 3:30-4:14 p.m. - AZK Concurrent Papers
  - "Exhibit/Habitat Conservation for the Indian Gharial" - Mike Bostwick
  - "Butterfly Experience" - Bob Chastain
- 4:15-5:00 p.m. - AZH Concurrent Papers
  - "Interntional Conservation Trail" - T.H. Culhane
  - "Horticulture Therapy in a Zoo Setting" - Gary Wangler, Sarada Krisman
- 5:00-6:30 p.m. - Supper on Your Own
- 6:30-7:00 p.m. - Joint Panel - "Privitization Panel Discussion" - Dr. Mark Wourms
- 7:00-8:30 p.m. - AAZK Workshop - "Keeper Training Program" - Bruce Carr
- 8:30-10:00 p.m. - Concurrent AAZK Workshops - "Professional Development" - Linda King
  - "Solutions for a Small Panet - Direct Conservation Action and Stewardship for Saving Nature" - Norman Gershenz, Center for Ecosystem Survival
- 7:00-10:00 p.m. - AZH Slide Night

**Tuesday, Oct. 8, 2002 - ZOO DAY**

- 9:00 a.m.-5:00 p.m. - Behind The Scenes Tours
- 11:00-11:30 a.m. - AZH Workshop (Valley)
- 11:30 a.m.-2:00 p.m. - LUNCH
- 2:00-2:30 p.m. - AZH Workshop (Tortoise Island)
- 3:00-3:30 p.m. - AZK Workshop (Baboon Exhibit)
- 4:30-5:00 p.m. Happy 1/2 Hour
- 5:00-6:00 p.m. - IMAX Showing
- 6:00-10:00 p.m. - Dinner and Silent Auction (Buses will be returning to hotel throughout the evening)

**Wednesday, October 9, 2002**

- 8:30-10:00 a.m. Joint Paper Session
  - "Portico Group - Exhibit Design" - Becca Hansen
  - "Just Browsing - How to Preserve Browse for Lean Times" - Lee Houts and Sue Middleton
- 10:00-10:30 a.m. BREAK
- 10:30 a.m.-Noon - AAZK Paper Session
  - "Development of a Browse Notebook for Use by Mammal Keepers" - Denise Wagner
  - "It's Not Just Quills That Are Sharp" - Kim Elaine Zirpolo and Donna Kent
  - "Let's Get Together: The challenges and successes of introducing Angolan Colobus Monkeys (*Colobus angolensis palliatus*)" - Ann Wookey
  - "Helping Ursula: Incorporating Compatible Alternative Therapies to Support Traditional Western Veterinary Medicine" - Lee Houts
- 10:30-11:15 a.m. - AZH Paper Session - "Preventing Tree Damage in Zoo Exhibits" - Rick Taglow
- 11:15 a.m.-noon - "Madagascar - Eden in Flames: A Report on the Ranomasana Restoration Project"
- 12:00-1:30 p.m. - AAZK LUNCH
- 12:00-1:00 p.m. - AZH Trip to Powell Gardens
- 1:00-2:00 p.m. - AZH LUNCH
- 2:00-3:00 p.m. - AZH - President's Special Workshop
- 3:00-5:00 p.m. - AZH Guided Tours of Powell Garde
- 1:30-3:00 p.m. - AAZK Concurrent Paper Session
  - "The Blanding's Turtle Recovery Program" - Angie Dosch
  - "Working With New Species: Training a Pileated Woodpecker (*Dryocopus pileatus*)" - Paula Blum
  - "Breeding the Silvery-Cheeked Hornbill" - Norma Haynes
  - "The Opening of the Arctic Ring of Life Exhibit at the Detroit Zoo" - Tracy Under and Michelle Pratt
- 1:30 - 3:00 p.m. "!!Free Trip to Africa!!" - Jay Pratt
  - "Enrichment Committee - Enrichment RAP Session"
- 3:00-3:30 p.m. BREAK
- 3:30-5:00 p.m. - AAZK Concurrent Workshops
  - "Animal Training 101: Principles of Animal Training" - AAZK Animal Behavior Management Committee
  - "Australasian Workshop" - Jacque Blessington
- 5:00-6:30 p.m. - Supper On Your Own
- 6:30-8:00 p.m. - AAZK Concurrent Workshops
  - "Animal Training Workshop: Training for Specific Behaviors" - AAZK Animal Behavior Management Committee
  - "Lewa Wildlife Safaris - A Keeper's Dream Come True" - Patty Pearthree and Kevin Shelton
- 8:00 p.m. -? Hospitality Suite will open early for the Training and Enrichment Video Session. It will run until videos are gone. Free night for everyone else.
- 7:00-9:00 p.m. - AZH Open Member Discussion
  - "Development of Zoo Horticulture Training Manual"
  - "Development of Gardener Certification"
  - "Discussion on AZH Partnerships and Accreditation"

### Thursday, October 10, 2002

- 8:30-10:00 a.m. - AAZK Paper Session

“Behavioral Effects of Alternative Feeding Methods for Asian Small-Clawed Otters”

Melissa Friedlund

“Comparison of Activity Levels and Methods of Introduction Between a Juvenile and Adult Pair of North American River Otters (*Lutra canadensis*)” - Heather Haigh

“Conditioning Tigers (*Panthera tigris*) for Emergency Recall at Disney’s Animal Kingdom”

Angela Binney

“Thailand Clouded Leopard and Fishing Cat Program” - Heather Haigh

- 8:30-10:00 a.m. - AZH Panel Discussion “Plants for Interior Zoo Exhibits” - Frank Pizzi, Sarada

Krishnan, Lori Johnson-Roedel and Gary Outenreath

- 10:00-10:30 a.m. BREAK

- 10:30 - Noon - AAZK Paper Session

“Against all Odds: A Successful Reintroduction of a 1.0 Dwarf Mongoose (*Helogale parvula*) into the River’s Edge Pack at the St. Louis Zoo”

Tammy Schnidt

“Hoofed Stock Management on Disney’s Animal Kingdom’s West Savannah”

Jenifer Windau

“Training of a Black Rhino Calf from Birth Through One Year of Age at DAK”

Becky Ellis

“Gestational Monitoring of an Eastern Black Rhinoceros (*Diceros bicornis michaeli*) Through Ultrasonography, Serum and Urine Hormone Quantification, Fetal Assessments and Girth Measurements” - Wendy Shaffstall

-10:30-noon - AZH Panel Discussion “Plants for Exterior Zoo Exhibits” - Rob Halpern and panelists

- Noon - 4:00 p.m. - AAZK - Awards Lunch, Annual Business Meeting and Conference Bids

- Noon-1:30 p.m. - AZH - Presentation of AZH 2003 Conference in Toledo, OH

- 1:30-5:00 p.m. AZH Board Meeting (AZH members get free time)

- 6:00 p.m. to midnight - Joint Banquet (Banquet and Live Auction)

### Friday, October 11, 2002

- Post Conference Tour A - Missouri Botanical Gardens

- Post Conference Tour B - Fuson Conservation Area - Indiana Bat Caves

### Saturday, Oct. 12, 2002

- Post Conference Tour A - choice of St. Louis Zoo, Natural History Museum, Science Center and Art Museum

- Post conference Tour B - Dickerson Park Zoo and Prairie Chickens

## BRANCHING OUT



Conference Website:

[WWW.AAZKAZH2002.ORG](http://WWW.AAZKAZH2002.ORG)

You can also reach us at our email address:

[AAZKAZH2002@AOL.COM](mailto:AAZKAZH2002@AOL.COM)

**See You In Kansas City !**



# REACTIONS

## *A Question and Answer Forum for the Zoo Professional on Crisis Management*

*By William K. Baker, Jr., Curator  
Little Rock Zoo, Little Rock, AR*

### **Question**

What options are available for emergency or temporary housing for animals?

### **Comments**

Housing zoological specimens under normal circumstances is often challenging enough, but housing them under abnormal circumstances can result in tapping every last shred of your professional creativity. Take it as a given that at some point every zoological facility will have a need for emergency housing. This can be due to a situation as simple as the temporary relocation of animals for emergency repairs to an exhibit or an exhibit renovation, up to something more complex as the separation of animals due to conspecific aggression.

The situation will dictate how extensive an investment of time, energy, and especially finances is required. If that sounds like an oversimplification of the parameters, it really isn't. For example, if an exhibit loses primary containment and a small group of gazelles are loose in a service area, they can easily be contained by closing the gates to the area or be redirected to an empty holdover. In the purest technical sense, the animals have been housed.

Another example would be the relocation of small mammals into a shipping container or crate for a temporary period of time for annual exhibit maintenance. The question that must be asked in both circumstances is how long will the animals need to be in holding? In an ideal situation, a zoo would have extensive holding facilities for conservation research, quarantine, or surplus purposes. This type of facility would have all the appropriate bells and whistles, such as night houses, water, electrical, and the capability to separate animals due to behavior problems or veterinary needs. The problem is this type of set up inherently requires a significant financial outlay for an area that will be used on an infrequent basis at best.

Still, other options do exist that are effective and capable of resolving the problem. First, let's set the stage for something realistic in terms of a crisis. The most likely crisis that would result in the need for emergency housing would have to be a natural disaster. Examples of this would include avalanche, flooding, tornado, hurricane, and landslide. Any one of these events has the capability of damaging or destroying the primary containment of an exhibit, thereby releasing the animals.

The simplest way to contain an animal or group of animals would be the use of directed barriers. For more agile or airborne species such as small mammals, primates, or birds, containment or mist nets

can be very effective once supported and secured to the ground. Unfortunately, both of these methods have a serious drawback, while they are both simple and cost effective, they do not provide for any real shelter or housing. In other words, this method is only realistic for short-term applications.

For more long term housing, building materials will have to be used. This will require lumber, nails, screws, mesh, netting, fencing material, hardware, and extra locks. The lumber and such is pretty self-explanatory. However, mesh, netting, and fencing materials require further discussion. Mesh can be found in a variety of types that is application specific. Cyclone fencing in 6-gauge is effective. Hardware cloth and lighter gauge mesh would be suitable for smaller mammals, birds, and reptiles in terms of containment. But, in many cases wooden holding boxes may prove more appropriate for species-specific needs. Prevailing weather conditions will also have to be factored into the equation. Nest boxes will undoubtedly be needed for many species. Canvas tarps can be used for area shelter for larger mammals.

Larger mammals can be contained using prefabricated panels of 2x4-inch, 6-gauge mesh. This is usually available in 4x8-inch and 4x10-inch sizes. This material will contain hoof stock and small to medium-sized carnivores when reinforced with 4x4-inch posts. These panels are normally floor stock items at most farm and ranch supply houses.

Netting comes in a variety of styles and applications. Lighter netting such as poultry netting is applicable for game birds and waterfowl. The heavier custom netting, which is used for exhibits, can be stored rolled until it is needed. This material is available from numerous AZA Commercial Members and is effective for a wide range of specimens including carnivores and large primates. Examples would include Carlos® and Cascade® mesh/netting products.

Hoof stock applications can be met by using Powder River® or Priefert® panels. These have been used for domestic and exotic purposes for many years due to their flexibility and ease of transport. One of the neatest products on the market in years is available from Priefert®. They now offer roofed portable caging units in a kennel style. These units are covered in 2x4-inch mesh and are suitable for birds, small primates, and smaller carnivores. The real advantages to this system are it can be set up in a series of connected linear units and break down into stackable panels for easy storage.

However, in a pinch, trailers, shipping crates, and Vari-Kennels® will work. The key is to invest the time in advance to identify the needs of the collection. Considering your options after the fact is definitely not the way to handle emergency housing for your animals. Mega herbivores such as elephants, giraffes, and rhinoceros will require extensive advance planning to identify needs in relation to behavior.

**Next Month:** How do I decide when it's appropriate to use a net versus a dart gun?

If you would like to submit a question for this column or have comments on previously published materials, please send them to AAZK, Inc., 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 Attn: Reactions/AKF.

(About the Author: Since 1985 Bill has been active in the fields of science, zoology, and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team Leader, ERT Member, Large Mammal Keeper, Senior Keeper, and Zoo Curator at various zoological facilities. His area of research is crisis management in zoological institutions, which draws upon practical experience and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

# Transferring African Penguin Eggs

By

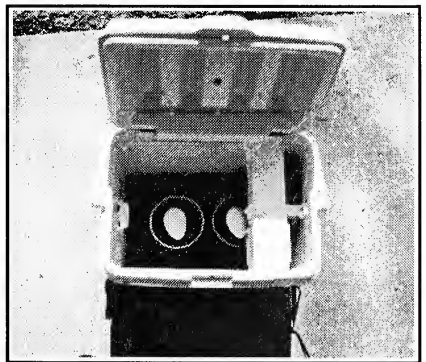
Eric Jeltes, Bird Keeper

Baltimore Zoo, Baltimore, MD

Last year, two African penguin eggs (*Spheniscus demersus*) were transported from the Baltimore Zoo in Baltimore, MD to the Fort Wayne Children's Zoo in Fort Wayne, IN. While moving fertile eggs is not new to the captive management of birds as a whole, it is new to the African penguin community. The International Crane Foundation (ICF) has successfully moved eggs of several different species of cranes across the United States, and to Russia (Kelly Maguire, personal contact). The transference of eggs has also occurred with the more closely related Humboldt penguins (*Spheniscus humboldti*). Nine eggs were transferred from the Milwaukee County Zoo in Wisconsin, to the Cleveland Zoo in Ohio on 3 April 1990, where six of the eggs successfully hatched (Karin Schwartz, personal contact). Currently there are 35 zoos and aquariums in North America that house African penguins and support the African Penguin Species Survival Plan (SSP), (Marroulis, Regional Studbook). Traditionally only fully grown birds, whether adults or juveniles, have been shipped between these institutions.

Fostering eggs to non-parent pairs has historically been practiced successfully within the penguin colony at the Baltimore Zoo and was the method used to get the Fort Wayne penguins ready for the new arrivals. If a pair of penguins are unable to raise offspring, or the need exists to produce more eggs from an SSP target pair, the eggs can be given to a pair that has good experience in raising chicks. Dummy eggs are placed in the foster penguin's nest box weeks before the fertile eggs are due. This allows the foster pair time to start sitting tightly on the eggs and gear up to raise the chicks. Before the first egg is due, the real eggs are switched with the dummy eggs and hatch out under the foster parents. The foster parents then raise their adopted chicks as their own.

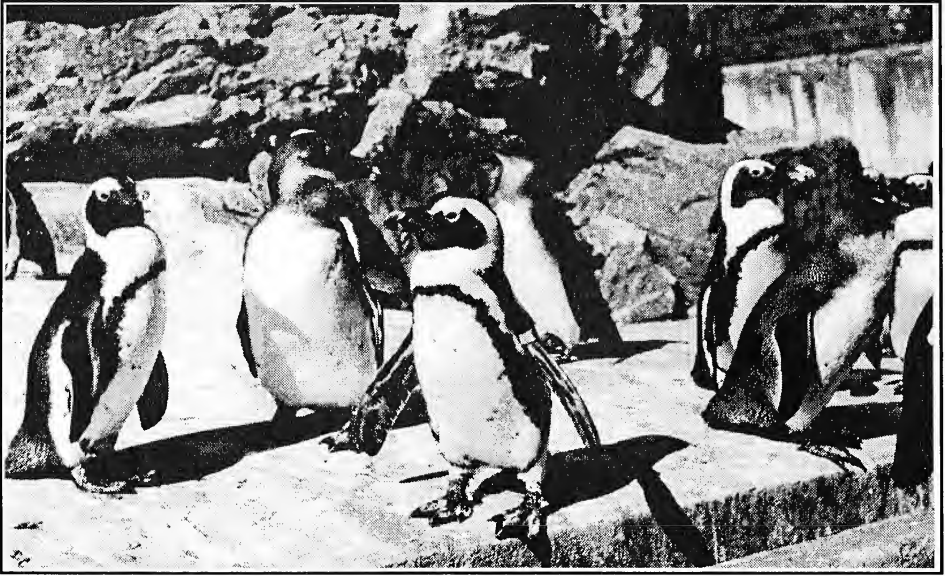
A pair of penguins, determined to be genetically valuable by the African Penguin SSP committee, had laid a clutch of two eggs at the Baltimore Zoo in late February. It was decided that these eggs would make the journey to the Fort Wayne Children's Zoo. Dummy eggs were placed under several pairs of penguins at Fort Wayne to ensure that at least one pair would gear up for raising offspring. With the new foster parents in place all that was needed to do was to get the eggs from Baltimore, MD to Fort Wayne, IN. The day of the move occurred on 1 April 2001, when the eggs had been incubated for 28 and 32 days respectively.



**Igloo® cooler used to transport African penguin eggs between Baltimore and Fort Wayne zoos**

African penguins have an incubation period of 38 days, so this was approximately three quarters of the incubation period. The transport incubator used was a specially designed

Igloo® cooler with a DC adapter so that it could be plugged into the cigarette lighter in our van. To secure the eggs within the incubator, it was filled half way with recycled newspaper chips. The eggs were placed into, but not covered by the newspaper chips. This is the same substrate that is used in the nest boxes at the Baltimore colony. Upon arriving at the Fort Wayne Children's Zoo, the eggs were immediately placed under the foster parents who took to them right away. The eggs hatched on 7 April 2001 and 10 April 2001, with incubation periods of 38 days and 37 days respectively.



**African penguins at the Baltimore Zoo provided fertile eggs to be transferred to foster penguin parents at the Fort Wayne Children's Zoo.**

With the success of this move, new doors have opened for the captive management of African penguins. Institutions with colonies containing genetically valuable birds that are at their maximum for living space may be able to transfer eggs to institutions with available accommodations. It can also bring new and different aspects of penguin husbandry to staff members in other zoos and aquariums that do not have a large amount of experience with penguin chicks. The African Penguin SSP committee has already made recommendations for eggs to be shipped between zoos in the upcoming years.

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*Photos provided by the author*



# VISITING THE VERVETS: CHEAP AND EASY ENRICHMENT

By Dorothy Barr\*

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\*currently attending graduate school in  
Boston, and volunteering at the Franklin Park Zoo

**Abstract:** For some zoo animals the presence of visitors may be stressful, but for others visual interactions with humans may be positive rather than negative and may encourage behaviors similar to those found in the wild. In this pilot study, vervet monkeys (*Cercopithecus aethiops*) at the Rosamond Gifford Zoo at Burnet Park in Syracuse, NY were found to be attentive to activities outside their exhibit, just as they might observe other animals in the wild. They did not show any apparent signs of stress from the presence of the public. In return, visitors were attracted by the monkeys' alertness and were able to observe natural behaviors. There are implications for designing exhibits for these monkeys and others with similar lifestyles so as to encourage such mutually rewarding activities.

## Introduction

People visit zoos in great numbers. In North America, zoo attendance figures exceed those of all professional sports events combined (Hancocks, 2001). Although a visit to the zoo has traditionally been regarded as primarily recreational, modern zoos usually emphasize education, conservation and research. Furthermore, many believe that zoos should play a more active role in promoting conservation not just at home but also *in situ* (Conway, 1979; Croke, 1997; Hancocks, 2001; Luoma, 1987; Stevens, Hutchins and Maple, 1996).

At the same time, zoos are also concerned about the well-being of the animals in their charge and strive to provide improved nutrition, sophisticated veterinary care, and enhanced opportunities for a more natural existence. Increased mental stimulation is an important component of this approach, and elaborate "enrichment" programs and activities for the animals are often implemented. Naturalistic environments, novel items for play, and presentation of diets in ways which encourage natural feeding behaviors are among the methods utilized to stimulate the animals both physically and psychologically.

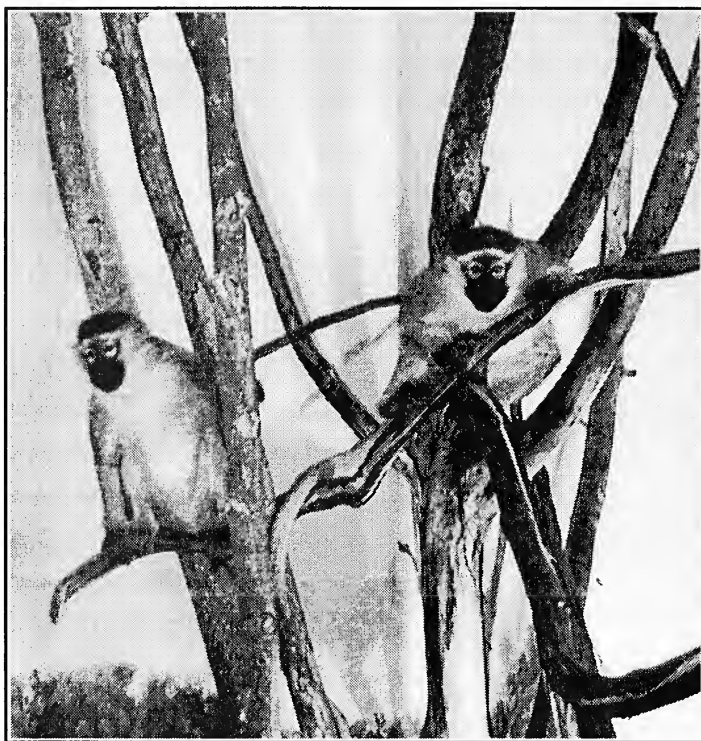
Zoo animals certainly need to be protected from harassment by the public. However, the opportunity for visitors to interact with the animals, even from a distance or behind glass, can have highly positive effects, with implications for visitors' better understanding of conservation issues (Croke, 1997; Hancocks, 2001; Luoma, 1987). Visual interactions with visitors may in turn also serve to stimulate and enrich the mental lives of captive animals. Rather surprisingly, there has been little research on this.

Much of the work that has been done on animal/zoo visitor interactions has centered on nonhuman primates. Some studies have found that the presence of large numbers of zoo visitors has deleterious effects on animals' levels of activity, social interactions, and agonistic encounters (Chamove, Hosey and Schaetzel, 1988; Fa, 1992; Glatston et al., 1984; Wood, 1998). Not all researchers found negative effects in human-primate interactions, however. Cook and Hosey (1995), in studying human-chimpanzee interactions at the Chester Zoo in England, remarked that "the relationship between human and nonhuman primates in zoos is complex... the opportunities to interact even may be enriching" (439).

Mitchell et al. (1988) studied the effects of visitors and cage changes on the behaviors of golden-bellied mangabeys (*Cercocebus galteritus chrysogaster*) at the Sacramento Zoo. They found that although there was an increase in aggressive displays towards visitors as visitor attendance increased, the animals' sexual behavior, grooming and play were relatively unaffected. Moreover, aggressive

displays toward other non-human primate species in nearby cages actually decreased. They remarked that a "zoo is an environment filled with stimulation while a monkey may not have the space and the variety of foliage and organisms available to it that a wild animal does, that monkey does respond to people, animals, airplanes, and other urban noises to say nothing of its more intense relationships with conspecifics in its own enclosure. "One of the most salient stimuli in a monkey's zoo environment is the zoo visitor" (Mitchell et al. 1991, p. 515). In addition, "primates, even these irascible mangabeys, habituate to observers" (p. 520).

Just as animals in the wild are constantly interacting with others, visual contact with human visitors may enrich the lives of captive animals. For example, most wild animals must be constantly alert for predators or sources of food, and consequently monitor the activities around them, including those of other species sharing their habitats. In captive situations where predation and food are not factors, zoo visitors may serve in a sense as substitutes and engage the animals' attention in similar ways, leading to mutually beneficial interactions. The current study looked at the effects of visitors on vervet monkeys (*Cercopithecus aethiops*) at the Rosamond Gifford Zoo at Burnet Park in Syracuse, NY. Although statistical analysis of the data remains to be done, there appeared to be no increased social or behavioral problems found even when large numbers of the public were present.



PL, at left, and May on right - both "on guard" from middle of exhibit.

(Photo by Roger Harrod/Rosamond Gifford Zoo, Syracuse, NY)

Vervet monkeys are social primates living primarily in savannah areas of East Africa. One of the most common and highly adaptable primates in Africa, they live in troops and spend roughly equal amounts of the daylight hours on the ground and in trees. Since the 1960's they have been intensely studied in the wild, most notably by Dorothy L. Cheney and Robert M. Seyfarth (1992).

Mortality from predators is high among wild vervets. Deterioration of habitat and increasing pressure from human populations also take their toll, and since the mid-1960s vervet populations have been steadily declining. Life expectancy is perhaps 12-15 years in the wild; over 60% of all infants die during their first year, and only 27% reach sexual maturity. (Cheney and Seyfarth, 1992).

Since their lives tend to be anything but leisurely, wild vervets must remain constantly alert to potential harm and/or food sources. Highly social animals, they have a number of vocalizations including an elaborate series of predator calls. There are different calls for different predators, and the monkeys respond accordingly. A “leopard” call sends them up into trees, for instance, while hearing a “snake” call causes them to stand up on their hind legs and look around the grass. An “eagle” alarm results in the monkeys leaping down from trees and looking up in the sky (Cheney and Seyfarth, 1992).

In a captive situation, avoiding predators and finding food are not factors. Nevertheless, many natural behaviors persist, though manifested in different ways. The current study proposed that in captivity vervet monkeys might transfer their interest in the activities of other animals to human activities, since humans are the most abundant animals around them.

**Methods**

Three elderly female vervets live at the Rosamond Gifford Zoo: PL (born in 1981); PP (born in 1982); and May (born in 1987). Their exhibit has three large full-length windows opening to the inside of the building, and five equally large windows opening onto an outside playground. The vervets therefore have good views of zoo activities both in the main courtyard and inside their building, which houses other primates and social animals.

The study looked at the proportion of time the vervets spent looking outside their exhibit, as opposed to focusing their attention on each other or inside the exhibit. The method of choice was Scan Sampling, and observations took place from May-December. The actions of each monkey were recorded every 15 seconds, for varying periods of time, at different times of day, on different days of the week, both when the zoo was open and busy, when visitation was light, and before the zoo opened to the public.

**Results**

Although statistical analysis has not yet been done, the vervets appeared to monitor activities outside their exhibit most of the time. As shown in Table 1, at least one of the animals was on the alert 83.8% of the time, and at least one was in the front part of the exhibit 86.0% of the time. Grooming sessions were typically short (never more than 5-6 minutes) and were interspersed with watching, and the third animal was almost invariably on guard while the others groomed. Drinking and searching for food were always done quickly, taking only a few seconds. Eating (including chewing on sticks) generally was done concurrently with watching. When afternoon enrichment (typically a small food treat) was given, the vervets would gather the items as quickly as possible, stuffing their cheek pouches and promptly resuming observation positions, so they could eat and keep watch at the same time.

**TABLE 1**

	Number of 15 second time units	% Time on guard
At least one monkey on guard	6319	83.8%
At least one monkey in front	6488	86.0%

**(Total number of 15 second time units: 7545)**

Sometimes, unusual visitors or activities in the courtyard outside the exhibit especially engaged the vervets’ attention. Occasionally these events were sufficiently unusual or upsetting to elicit alarm

calls. One would also expect the monkeys to respond to keeper activities, such as the arrival of the enrichment cart in the afternoon. In fact, however, the animals often showed no sign of noticing, though even on crowded days they must have seen the keepers. However, unusual noises in the holding area, which is invisible from the exhibit, always got a response. On one occasion a keeper accidentally knocked over one of the nets used to capture the monkeys for medical procedures. The vervets immediately went into a state of high alert, stationing themselves throughout the exhibit, watching in all directions, and giving repeated alarm calls until it was clear that it was a false alarm.

**Discussion**

Although this was a pilot study, the data suggest that in captive situations, vervets monitor their surroundings, as would be natural in the wild. Although they were more alert when unusual activities were going on in the zoo, their general alertness was not apparently related to the number of visitors. Large crowds do not therefore seem to be a source of stress for these animals.

Agonistic encounters were few, brief and often ended in grooming (Table 2). There was no relationship between the number of visitors and either occurrences of antagonism or grooming sessions.

**TABLE 2**

	<b>Total No.</b>	<b>% of Time Units</b>
<b>Agonistic Encounters</b>	<b>260</b>	<b>3.4%</b>
<b>Grooming Sessions</b>	<b>922</b>	<b>12.2%</b>

Although the monkeys avoided eye contact with humans and, in fact generally ignored them, visitors were attracted by their alertness. Comments overheard about the vervets were usually favorable. They included: “look, he’s coming to see us” (the most frequent remark, though it was never true); “he’s playing with you;” “look, how cute;” “they’re so alert.” Negative comments such as “they look bored” were rare. And once their attention was engaged, visitors often read the graphic about the animals or asked questions.

Studies have shown that visitors spend more time at exhibits which they find attractive. Naturalistic settings, babies, and active as opposed to passive animals are all visitor-pleasing elements. This in turn leads them to feel more positive about the individual animals and also about the zoo, and as a result they are more open to learning (Croke, 1997; Ehmke, 2001; Hancocks, 2001; Price, Ashmore and McGivern, 1994).

**Implications for Zoo Practices**

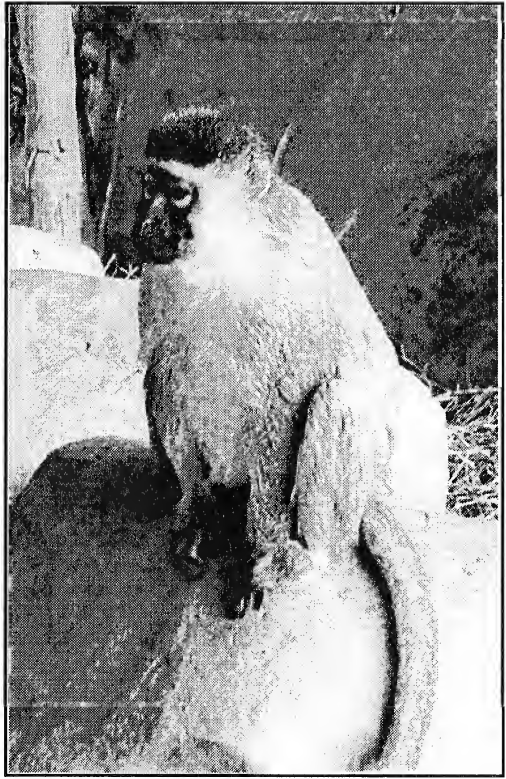
Markowitz (1982) pointed out that “natural” exhibits are not possible in zoos since the animals are not exposed to such natural phenomena as flood, famine and predation. “Natural is not a synonym for good” (12). “Naturalistic” is a better term and such exhibits may give zoo visitors some appreciation of the animals’ native homes. He added that while species-typical behaviors can happen in captive situations, sometimes there are great incongruities between the behaviors of animals in the wild and in captivity (146). It is important to find techniques that “allow visitors an opportunity to see active species-typical behaviors and simultaneously give the animal a feeling of privacy” (154).

The current study seems to indicate that vervet monkeys are not stressed by visual contact with zoo visitors, but that they in fact benefit from such exposure since visitors provide visual stimulation and thus encourage natural behaviors. Certainly zoo animals should always be protected from harassment by visitors, especially from potential physical harm such as feeding or throwing objects.

However, it is important not to overlook the fact that zoo visitors also provide a source of enrichment, and for captive animals such as vervets this can be mutually rewarding. Michael H. Robinson, former Director of the National Zoological Park, Smithsonian Institution, Washington, DC, put it well: "Our zoos will become much more effective vehicles for education if visitors can be excited by the activities of the animals under our care" (Robinson, 1994).

#### Acknowledgments:

This study was done as part of the requirements for the degree of Master of Arts in Liberal Studies from the State University of New York, Empire State College. Many thanks are due to my committee members, Deborah Kleese, Marianne Arieux, and Nikki Shrimpton. Work at the Rosamund Gifford Zoo at Burnet Park was done as part of an internship, and the staff, especially the keepers in the Small Mammal Department, were very helpful.



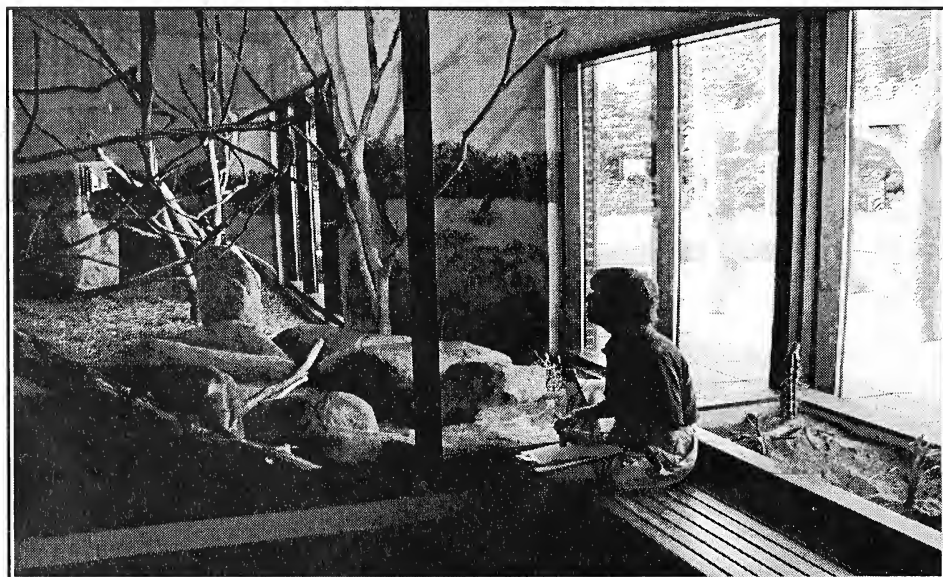
PL "on guard" at front of exhibit.

(Photo by Roger Harrod, Rosamond Gifford Zoo, Syracuse, NY)

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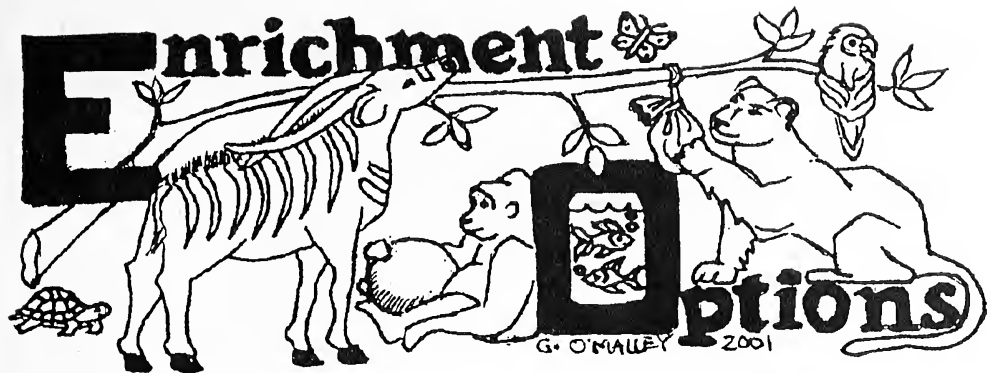
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Author observing vervet monkey during her enrichment study at Rosamond Gifford Zoo.

(Photo by Roger Harrod, /Rosamond Gifford Zoo, Syracuse, NY)



*By Jan Roletto, Seneca Park Zoo  
and Dawn Neptune, Utah's Hogle Zoo*

### **Introduction**

Over the past few years members of AAZK and AZA have been working diligently to form a working relationship that will greatly improve professional animal care and enhance communication in the field of zoo keeping. This evolving partnership has been seen in efforts such as the newly proposed AZA/AAZK Keeper Training Course partnership. AAZK's published resources such as Handbook of Zoonotic Diseases, Biological Values for Selected Mammals, Zoo Infant Development Notebook, Resources for Crisis Management and the Enrichment Notebook as well as the Animal Data Transfer Forms (including new Enrichment and Training Forms) demonstrate this Association's commitment to professionalism.

This month Dr. David Shepherdson, Research Coordinator at the Oregon Zoo and long-time advocate of environmental enrichment, as co-chair of AZA's BAG (Behavioral Advisory Group) will share with us some new and welcomed changes to AZA's accreditation requirements. We look forward to seeing how enrichment will continue to emerge and raise the standards in zoo husbandry while fostering the bridge to other professional organizations in our field

### **Explanation of the AZA Accreditation Changes with Respect to Enrichment**

**David Shepherdson  
Oregon Zoo, Portland, OR**

Environmental Enrichment is now a mainstream technique of zoo husbandry. A number of factors have played a role in making this so. The newsletter *Shape of Enrichment* played (and still plays) a critical role in informing and providing a forum for zoo professionals involved in the practice and science of enrichment. Also around this time the American Association of Zoo Keepers (AAZK) formed an enrichment committee and began to publish articles about enrichment followed by several editions of the comprehensive AAZK *Enrichment Notebook*. The first International Environmental Enrichment Conference hosted by the Oregon Zoo in 1993 boosted awareness particularly of the importance of a sound scientific underpinning to the topic. Another important mechanism for spreading ideas and enthusiasm has been the AZA enrichment listserve. A web based database system just developed by the Forth Worth Zoo shows great potential for continuing to increase the availability and sophistication of information available.

The next step is to increase the scope and effectiveness of enrichment programs in AZA zoos. To this end in 1999 the BAG organized a working group consisting of experts in zoo management,

husbandry, behavior, nutrition, training and veterinary science to lay out the basic framework for these programs in AZA member institutions. The following comprehensive definition of enrichment resulted largely from this meeting:

“Environmental enrichment is a process for improving or enhancing zoo animal environments and care within the context of their inhabitant’s behavioral biology and natural history. It is a dynamic process in which changes to structures and husbandry practices are made with the goal of increasing the behavioral choices available to animals and drawing out their species-appropriate behaviors and abilities, thus enhancing their welfare. As the term implies enrichment typically involves the identification and subsequent addition to the zoo environment of a specific stimulus or characteristic that the occupant(s) needs but which was not previously present.”

The framework that was developed at this meeting defines the basic process of planning, goal setting, implementation and evaluation together with the documentation and record keeping needed to keep a program on track. This framework is the basis for recent changes to the AZA accreditation requirements. These requirements can and will be amended in the future to “raise the bar” with respect to enrichment programs in AZA zoos but the key addition to the 2002 standards is encapsulated in the following paragraph:

*“A formal written enrichment program is recommended which promotes species-appropriate behavioral opportunities for appropriate taxa. [AC-31]”*

*Explanation: It is recommended that an enrichment program be based on current information in behavioral biology, and should include the following elements: goal-setting, planning and approval process, implementation, documentation/record-keeping, evaluation, and subsequent program refinement”*

In order for zoos to meet these new standards it was clear that some support was necessary. This was a major factor in the development by the BAG of the new AZA school, “Managing Animal Enrichment and Training Programs” or MAETP. The first school in 2002 was hosted by Disney’s Animal Kingdom as will the next in 2003; subsequent schools will be held at different institutions around the country. Some private consultants are also offering some excellent courses along similar lines.

The main challenge to animal care staff as I see it is to take these standards and guidelines and turn them into procedures that are not only workable in their institutions but are useful and which result in more effective environmental enrichment. Perhaps the most challenging issues revolve around practical methods to schedule enrichment activities in advance, to record, and finally to evaluate those activities. This is an area of great activity and innovation right now and I am confident that a number of workable solutions will settle out in due course which will work in most of the varied institutions within the AZA. In the meantime the field is wide open to creative and enthusiastic individuals who want to make a difference to the quality of our animal care.

**Visit the AAZK Enrichment Website - [www.enrich.org/aazk](http://www.enrich.org/aazk) or to join the  
Enrichment Listserve, email [jackbell@humboldt1.com](mailto:jackbell@humboldt1.com)  
An archive of past postings may be viewed at [www.cava.org/enrich](http://www.cava.org/enrich)**



# Legislative Update

Compiled by Georgann Johnston  
Legislative Advisor  
Sacramento, CA



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## Immediate Ban on Importation of Snakehead Fish

Secretary of the Interior Gale Norton has announced a proposal to ban importation and interstate transportation of live snakeheads, voracious fish indigenous to Asia, Malaysia, Indonesia, and Africa.. The proposal would add the family of snakeheads, comprised of 28 species, to the federal list of "injurious wildlife" under the Lacey Act, which authorizes the Secretary of the Interior to list nonindigenous wild animals deemed to be "injurious, or potentially injurious, to the health and welfare of people as well as to the interests of agriculture, forestry, and horticulture, or to the welfare or survival of wildlife or wildlife resources of the United States."

"These fish are like something from a bad horror movie," said Secretary Norton. "A number of these species can survive in the wild in freshwater almost anywhere in the United States. They can eat virtually any small animal in their path. They can travel across land and live out of water for at least three days. They reproduce quickly. They have the potential to cause enormous damage to our valuable recreational and commercial fisheries. We simply must do everything we can to prevent them from entering our waters, either accidentally or intentionally."

Three species of the fish have been found in open waters in California, Florida, Hawaii, Maine, Maryland, Massachusetts, and Rhode Island, and at least two have been established as reproducing populations (Florida and Hawaii). Thirteen states currently prohibit possession of live snakeheads; nevertheless, there is continuing evidence of illegal activity involving these fish even in states where they are prohibited. The proposal is based on information collected by the U.S. Fish and Wildlife Service, with assistance from scientists at the U.S. Geological Survey's Florida Caribbean Science Center in Gainesville, FL. The agencies began conducting a risk assessment of snakehead species in 2001, following the discovery of snakeheads in Broward County, FL, according to Service Director Steve Williams.

No federal law now prohibits the importation of snakeheads. If the proposed rule is adopted, U.S. Fish and Wildlife Service and U.S. Customs inspectors will have the authority to stop and seize shipments of live snakehead fish or their viable eggs. Those caught bringing snakeheads into the U.S. or transporting them across state lines without a permit could face penalties that include up to six months in prison and fines as high as \$5,000 for individuals or \$10,000 for organizations. Under the proposal, live snakeheads or their eggs could be imported or transported across state lines by permit only for scientific, medical, educational, or zoological purposes and in accordance with state laws. Snakeheads are widely available. They are sold in live food fish markets and some restaurants in Boston and New York, where the fish are legal. Snakeheads have also been sold through some aquarium fish retailers via the Internet. *Source: U.S. Fish and Wildlife News Release 23 July 2002*

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## New Prohibition on Hunting Endangered Sheep Species

Argali sheep (*Ovis ammon*), endangered in their native habitat of Central Asia, are now the subject of a hunting ban imposed by a U.S. government judge. Specifically, as lawsuit brought by the Animal Legal Defense Fund, the Fund for Animals, Earth Island Institute and several other plaintiffs was allowed to proceed while temporarily banning hunters from importing the heads and other parts of argali sheep killed in Central Asia. This species of sheep is formally designated endangered by the USFWS except in three countries - Mongolia, Tajikistan and Kyrgyzstan - where they are listed as "threatened". A proposal by the USFWS to upgrade the sheep's status to endangered in those countries has been in limbo for almost a decade.

Despite the agency's own fears about the species' survival, over the past few years the USFWS has granted more than 550 permits to import argali "trophies" into the United States. In March 2002 the

Dalai Lama called for an end to the killing of argali sheep in Mongolia. "I am deeply saddened to learn that Mongolia encourages trophy hunting of rare and endangered species for tourism," he said in a statement. "I therefore appeal to all concerned in Mongolia not to indulge in trophy hunting of rare and endangered species. I make this appeal as a Buddhist because of our respect and compassion for all living beings."

The lawsuit giving rise to the court order mentioned above contends that the permits violate the Endangered Species Act and other rules specific to argali sheep, the largest sheep of wild sheep in the world. *Source: Animals' Advocate; a publication of the Animal Legal Defense Fund Spring 2002*

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### **Legislative Lineup for 2002**

The following is a brief summary of legislation pending before Congress that may be of interest to zoo keepers. If similar bills are pending in both houses, the reference to each one is included. More information about each bill can be obtained by going to [www.hsus.org](http://www.hsus.org) (Humane Society of the U.S.) or the official web sites for the Senate [www.senate.gov](http://www.senate.gov) or the House of Representatives [www.house.gov](http://www.house.gov)

Cockfighting HR 1155, S 345. Would close a loophole in the Animal Welfare Act that allows for interstate commerce of birds used for "sport" fighting.

Horsemeat HR 3781. Would prohibit the slaughter, import, export, trade and transport of horses for human consumption.

Pet Theft & Puppy Mills HR 4039, HR 3058, S 1478. Would amend the Animal Welfare Act to establish strict guidelines regarding the source of animals used in research facilities; would establish guidelines for the need to raise socialized dogs and limit the number of puppies that can be bred by one facility/breeder dog per year.

Antibiotic Resistance HR 3804, S 2508. Would put limitations on the kind and number of antibiotics that can be used in factory farms.

Humane Slaughter H.Con. Resolution 175, S. Con. Resolution 45. Would direct the Secretary of Agriculture to improve enforcement of the provisions of the Humane Slaughter Act.

Elephant/Rhino/Tiger Acts HR 643, HR 700, HR 645. Would reauthorize these laws which ultimately provide funding to preserve the species and their native habitat.

Bear Parts HR 397, S 1125. Goal of legislation is to halt the poaching of all wild bear species in the United States by prohibiting interstate or foreign commerce in bear gall bladders and bile.

Canned Hunts HR 3464, S 1655. Would prohibit interstate or foreign commerce of captive exotic animals to be sold for entertainment or trophies.

Leghold Traps HR 1187. Would prohibit interstate commerce of steel-jaw leghold traps or fur from animals caught with these devices.

Mourning Doves H.Con. Resolution 275. To change the Migratory Bird Treaty Act to extend the hunting season for mourning doves into their nesting period.

Polar Bears HR 3932. Prohibits the use of polar bears in traveling shows and circuses.

*Source: The Humane Activist May/June 2002 vol. 4, #3*

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### **German Government Adopts Pro-Animal Constitutional Amendment**

The Bundesrat, Germany's upper house of government equivalent to the U.S. Senate, has ratified an amendment to the national "Basic Law" which adds the words "and animals" to a phrase establishing environmental rights. As amended, the phrase now reads: "The state takes responsibility for

protecting the natural foundations of life and animals in the interest of future generations.” The lower house of the legislature had already approved the amendment in May 2002 and it now becomes part of German law.

German Minister for Agriculture and Consumer Affairs Renate Kuenast explained that: “The measure could lead to new legislation limiting the testing on animals of products like cosmetics and drugs” but insisted that “human rights would still take precedence over those of animals.” Moreover, other spokespersons for animal interest groups have said that, under the strictest interpretation of the law, the amendment protects species rather than individual animals. *Source: Animal People: News for People Who Care About Animals July/August 2002 vol. XI, #2.*

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### **GAO Attacks Nonprofits for Hiding Fund-raising Fees**

The U.S. General Accounting Office has urged the Internal Revenue Service and Congress to crackdown on misleading declarations of fund-raising expenses by nonprofit organizations. The report, formally known as “GAO-02-526; Tax Exempt Organizations: Improvements Possible in Public, IRS, and State Oversight of Charities” was issued in June 2002. “Public watchdog groups have expressed concerns about expense reporting and the IRS has found and acted on instances of inaccurate reporting,” the GAO acknowledged. “However, the IRS has not assessed, and is just beginning to develop plans to assess, the extent to which charities are properly reporting fundraising expenses.” All 501(c)(3) charities must annually submit a public disclosure document called IRS Form 990 if they have \$25,000 in economic activity or assets during the year. However, the IRS does not require all charities to use the same accounting standards.

“Caution is warranted in using the Form 990 expense data, especially to compare charities,” the GAO reported stated, “because charities have considerable discretion in recording their expenses in the program service, general management, and fundraising categories. Different approaches for charging methods can result in charities with similar types of expenses allocating them differently.” Moreover, because charities have an incentive to report their expenses to be low, they often choose a method to report expenses that make the charity appear to be very efficient. An example of this is when fundraising fees paid to professional fundraisers are included with in-house expenses (e.g. salaries) for fundraising. The GAO report stated that available data does not show the extent to which charities may fail to properly itemize their expenses such as for professional fundraising, reporting these fees as “other” or anything else than what they really are. In general, the GAO investigation found that animal protection charities in general were reporting fundraising expense as program services under the headings of “public education” and “other” at least 26% of the time. A full copy of the GAO report can be downloaded at [www.gao.gov/new.items/d02526.pdf](http://www.gao.gov/new.items/d02526.pdf) *Source: Animal People: News for People Who Care About Animals July/August 2002 vol. XI, #2.*

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### **Bird Conservation Funding Approved by Congressional Committees**

Both the U.S. House and U.S. Senate Appropriations Committees secured funding for the Neotropical Migratory Bird Conservation Act. The House Committee set aside the full \$5 million for Fiscal Year 2003, while the Senate Committee set aside last year’s total of \$3 million. The Neotropical Migratory Bird Conservation Act was signed into law two years ago - a first-of-its-kind law that directly affects songbirds by helping to restore and conserve their wintering habitat. The law established a \$5 million yearly fund to support partnership programs to enhance habitat in the Caribbean and Latin America, where approximately five billion birds of 500 species spend their winters - including species considered the most endangered birds in North America, the Kirtland’s Warbler, Hermit Thrush, Black-capped Vireo and Kentucky Warbler.

The next step is for the full House to accept the Committee’s \$5 million recommendation, and that the Senate increases their commitment to the species-saving program. If you want to garner more information or express your opinion to your Congressional representative, go to <http://www.capitolconnect.com/audubon/contact/> and then look for the subject of “Bird Conservation Act”. *Source: Audubon Advisory 12 July 2002 vol. 2002, #14*

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### **Black Carp Importation/Interstate Shipment Banned Under Proposed USFWS Rule**

The black carp, used by American aquaculture farmers to control snails but feared by scientists who see potential widespread damage should the fish escape into the wild, would be banned from further

importation into the United States as well as in interstate transport under a USFWS proposal to name the black carp as an injurious species.

The proposed rule, would invoke the Injurious Wildlife Provision of the Lacey Act, and is in response to concerns about the possible impact of black carp on imperiled native mussels and snails in the Mississippi River basin, outlined in a petition to the Service by the Mississippi Interstate Cooperative Resources Association. The only exceptions to the bans imposed would be for zoological, educational, medical or scientific purposes. Black carp (*Mylopharyngodon piceus*), also known as snail carp, Chinese black carp, black amur, Chinese roach and black Chinese roach, is a freshwater fish that inhabits lakes and lower reaches of rivers in the wild. It was first brought to the U.S. in the early 1970s in a shipment of imported grass carp that were shipped to a private fish farm in Arkansas. A second introduction occurred in the early 1980s when the fish was imported as food and as a biological control agent to combat the spread of yellow grub (*Clinostomum marginatum*) in aquaculture farms. Unlike other species of Asian carp, black carp have not been found in the wild. The black carp, native to parts of China, Russia and Vietnam, can reach five feet in length, weigh up to 150 pounds and live up to 15 years. A single female can produce 129,000 to 1.18 million eggs. Black carp feed on zooplankton and fingerlings when small, but as adults, their powerful teeth permit the black carp to crush the thick shells of large mollusks. Yellow grubs, which are carried by the ram's horn snail, appear to be controlled with the elimination of the snail from aquaculture farms, especially those populated by channel catfish and certain species of striped bass, and black carp have been found to be effective in feeding on the snail.

It is not known how many of the 396 catfish aquaculture facilities in North Carolina, Mississippi, Louisiana, Oklahoma, Arkansas, and Florida might be threatened by yellow grubs, but data presented by the National Warmwater Aquaculture Center at Mississippi State University at an Asian Carp Workshop in April, 2000, suggested that only 1.5 percent of existing catfish farms and one research station had permits for black carp, and five additional farms and another research station were awaiting approval. Were black carp to escape from aquaculture ponds and enter rivers and tributaries of the lower Mississippi River, they would pose a "significant threat," the Service reported, to commercial shellfish stocks and threatened and endangered mollusks. "The value of the potential loss to the citizens of the affected States cannot be estimated at this time, but it is believed to be substantial," according to a Service document. Other species of Asian carp which are established in the wild have caused significant ecological impacts in the Mississippi Basin. Freshwater mussels, while providing valuable service as natural filters, are also harvested and used to make seeds for cultured pearls. Black carp that escape into the wild may pose a grave threat to that industry as well.

Source: USFWS Press Release 30 July 2002

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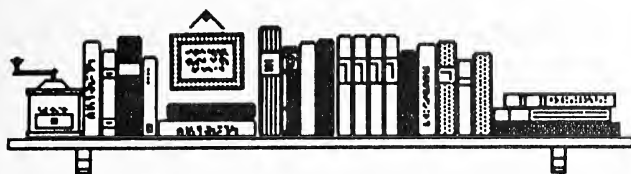
### **Peru Debt for Nature Swap**

Conservation groups have joined the U.S. government to finance a "debt for nature swap" that will cancel \$14 million in debt payments in exchange for Peru's "commitment" to spend the equivalent of \$10 million in local currency toward conservation over the next ten years reports the Environmental News Service. A major beneficiary will be Peru's tropical rainforest, home to dozens of endangered species, such as jaguar, harpy eagle, the giant river otter, black caiman and several species of macaws and rare plants such as walking palms and giant water lilies. Source: GREENlines Issue #1669 7/25-02

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### **Thailand Ivory Trade Hub**

According to a study by Save the Elephants, Thailand has emerged as Asia's largest buyer of illegal African ivory says *SF Gate*, AP 6/30. Although Thailand is a CITES signatory, "corruption, legal loopholes, outdated laws and lack of skilled enforcement allow smuggling and processing of ivory to flourish." Vietnam was also identified as "another major importer of raw African ivory" and while the study excluded China and Japan, those two countries are "reported to be the two largest consumers of processed ivory." Source: GREENlines Issue #1665 7/19/02



# Book Review

## **African Parrots**

By Rick Jordan and Jean Pattison

Copyright 1999 ISBN 0-88839-444-6

Hancock House Publishers, 1431 Harrison Ave., Blaine, WA 98230-5005

144 pages, paperback, \$12.95 USA, \$16.95 CAN

*Review by Theresa Cassidy, Zoo Keeper  
Kansas City Zoo, Kansas City, MO*

As a zoo keeper working with birds throughout most of my career, reading about them has always been a necessity, although not always an easy one. This book was very easy to read, informative, comprehensive and concise. The book has 13 chapters with sub-chapters allowing for easy reference. Authors Rick Jordan and Jean Pattison have 30 years of combined experience in aviculture, and have donated their royalties from this book to the American Federation of Aviculture, Inc.

Chapter 1 defines basic taxonomic classifications of the genera, explaining species and subspecies. Trade restrictions for the wild populations are encouraged, the behavioral differences between wild-caught and captive-reared birds are well pointed out.

Chapter 2 touches on the importance of captive management, the need for stud books, record keeping, and leg banding.

Chapters 3 through 10 are devoted to the genera, each genus is given its own chapter with species and subspecies appropriately described. Range, distribution, captive-breeding setups, diets, egg laying and incubation statistics are covered.

In Chapter 7.6, "Secrets to Breeding African Parrots - A Breeder's Viewpoint", I found a fascinating paragraph entitled, "Darkness: Advising Low Light to Encourage Breeding". Last winter a pair of Rose-Ringed Parakeets, whom we exhibit at the Kansas City Zoo in a small outdoor aviary in our African market area in the summer, and house indoors in the winter, were copulating and gnawing holes in the wood trim near the ceiling of their winter holding stall. To discourage this breeding behavior I shortened their daylight hours with a light timer over a two week period by two hours. It did not work. They continued to copulate, even squeezing behind metal cable housing to find a nesting cavity. Luckily, it came time to move them to the outside. Next winter I'll try increasing their daylight hours.

Chapters 11 through 13 cover breeding tips, incompatibility, incubation and hand-rearing.

While this book is aimed toward the private breeder and pet owner, I believe as a zookeeper it can be used as an invaluable tool for zoo housing and breeding African Psittacines. A bargain for \$12.95.

## **The Loving Care of Pet Parrots**

By Rosemary Low

Copyright 1999 ISBN# 0-88839-439-X

Hancock House Publishers, 1431 Harrison Ave., Blaine, WA 98230-5005

192 pg. paperback \$12.95 USA \$16.95 Canada

*Review by Angie Maxey, Zoo Keeper  
Kansas City Zoo, Kansas City, MO*

*The Loving Care Of Pet Parrots* is an informative resource for anyone who is thinking about becoming a pet bird owner or for anyone that is starting to work with psittacines. The author Rosemary Low

makes it very clear from the beginning that birds as pets are not for everyone and the decision to become a bird owner needs careful consideration. The text covers a wide range of topics but most importantly points out how sensitive, social, and complex psittacines' lives can be.

The book is organized into 20 chapters ranging in topics such as: should you own a pet bird; training; hazards in the home; plumage care and etc. Each chapter covers the basic information that every pet owner should be aware of when owning a pet bird or for anyone who works with psittacines. I found the text to be informative and the author to be knowledgeable on the subject matter in each chapter.

The book is geared more towards the pet owner and not the scientific community. Anyone who works with psittacines, such as in a zoo, would benefit from reading the book and perhaps better understand the complex behavior and lives of the birds in their care.

### **Wildlife of Southern Forests**

Edited by James G. Dickson

Hancock House Publishers, 1431 Harrison Avenue, Blaine, WA 98230

Copyright 2001 ISBN: 0-88839-497-7

Hardcover 480 pgs., 28 color photos, 222 b & w photos

\$50.00 plus s/h U.S.

*Review by Dan Conklin, Senior Biologist  
The Florida Aquarium, Tampa, FL*

*Wildlife of Southern Forests* is an entertaining blend of data and observations that makes for easy, yet informative reading. As indicated on the cover it is a guide for the "habitat and management" of an assortment of animals and plant communities. The focus is on animals regarded as game species as well as select nongame species. The book is largely integrated but overall can be divided into the following approximate proportions: 74% for natural history of the previously mentioned animals and relationships with the human population, 11% for treatment of plant ecology, sensitive plant communities, and forest management, 8% for the human relationship with wildlife past and present, 7% for a list of tables and figures, a list of common and scientific names relevant to the text, literature cited and index.

The book begins by laying the historical groundwork for what has shaped forests in the Southeastern United States to date, highlighting the impact of human interaction with the ecosystems. Habitats are identified and defined with relation to specific species and management practices are discussed along the way. One could bill the majority of the literature as management of game species relative to habitat needs.

The work is a compilation with each chapter written by one or more of thirty-three authors. The format in each chapter varies a bit, however a description of habitat needs, reproduction, foods, diseases, distribution, and management are recurring topics. Species receiving individual treatment include White-tailed Deer, Wild Turkey, Northern Bobwhite, Ruffed Grouse, Mourning Dove, American Woodcock, Wild Hogs, American Black Bear, Florida Panther, Red Wolf, and Red-Cockaded Woodpecker. Other chapters are divided into rabbits, squirrels, waterfowl, carnivorous furbearers, omnivorous furbearers, and herbivorous furbearers. A few chapters use a different format to describe wildlife. The chapter headed *Bird Communities of Southern forests* gives a few species accounts but mainly discusses habitat management. A chapter for bats gives species accounts for all bats found in the Southeast.

For those interested in learning more about the wildlife found in Southern forests of the U.S. this book is worth the price.

## **MOVING?**

Please let us know when you change your address! It now costs AAZK 99 cents every time an *AKF* is returned because of an incorrect address. Call 1-800-242-4519 (U.S.) or 1-800-468-1966 (Canada) or e-mail [aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com) to report your new address.

# Taxon Management and Practical Record Keeping

By  
*William K. Baker Jr.,*  
*Curator, Little Rock Zoo, Little Rock, AR 72205*  
and  
*Patricia M. Mulnix, Veterinary Technician,*  
*Little Rock Zoo, Little Rock, AR 72205*

## **Abstract:**

Zoological institutions utilize a variety of forms to record vital species information. This information relates to either animal husbandry, educational or veterinary data maintained for use not only by animal managers, but other staff members at a zoological institution. Unfortunately, the different forms are usually not compatible with each other thereby requiring manual cross-referencing by a staff member when comprehensive data is required for collection management, educational programs, or veterinary procedures. Clearly, an integrated approach is needed for taxon information management.

**Key Words:** Animal records, education, permanent veterinary record, taxon

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## **Introduction**

Historically, zoological professionals have managed essential information regarding their animal collection through the use of a variety of different forms and data sheets. This results in a diversity of purpose-specific sheets such as animal collection management plans, facility development plans, strategic development plans, educational handouts, diet sheets, docent training materials, animal training protocols, animal husbandry and exhibit maintenance procedures, and veterinary reference sheets.

As any curator or animal manager can attest to, resolving requests for specific information often results in comparative referencing between multiple data sheets and often the use of animal field guides or reference works as well. Case in point, having to cross-reference between animal inventory, diet sheets, and a collection management plan to perform an audit for estimated costs for a collection segment over a finite span of time. Simply having all of the available information in one place for reference is invaluable. This was the inspiration for the Taxon Management Record.

While in many cases, the needed data or information is used for animal husbandry or collection management purposes, in other situations the education and public relation-media divisions of zoological institutions have an interest in not only information for training classes, but also for use in press releases and background information on a particular animal or species in the collection. Also, the finance department of a zoological facility often requires animal-related data for grant applications and annual reports.

Clearly there is a need for a reference-styled data sheet that could theoretically meet the needs of an institution on multiple levels. This would be by definition beyond the animal aspects and purview of most ISIS®-based software in this particular regard, and oriented more towards a specific institutional application for logistical purposes; thereby meeting the needs of not only animal managers, but educators and media personnel as well.

## **Development**

By utilizing the aforementioned inter-disciplinary approach and referring to the previously presented Zoological Anesthesia and Veterinary Record forms (Baker et al, 2002), it was possible to continue the development of a series of forms which would be user-friendly, flexible, easy to read, and in a linear format, while building progressively upon all available information.

During the development process it was accepted that the information gathered from the previously mentioned field forms would have to integrate with the proposed taxon tables. Information oriented more towards animal husbandry and general information was isolated on the front page in a series of eight progressive tables providing data entry regarding taxonomy, data, diet, enrichment, training, exhibit, biology (natural history), and collection. Within each of the eight tables there exists six further sub-sections cross-referenced across five individual animal specimen fields.

In an effort to maximize space, the reverse side page layout was isolated more towards the technical aspects of animal husbandry and veterinary medicine providing data entry regarding taxonomy, data, identification, examination, treatment, consent, sedation, and research. Once again, eight tables and six sub-sections were used with five individual animal specimen fields. While every attempt was made to prevent replication of categories from the front page to the back, due to the style of recognizing individual specimens, it was inherent that the taxonomy and data fields would have to be replicated to prevent the reader from having to flip the document back to front during use. Conversely, animal groups exceeding five specimens would require additional sheets to preserve the "at a glance" style of this documentation. However, this was understood and considered a small trade-off when using a document style that is based in a template format.

The technical aspects of the Taxon Management Record were developed in-house using Microsoft Windows 98® and Microsoft Word 2000®. Similar in style to previous forms, the table layout was accomplished using a flowchart of Table>Insert>Fixed column width>insert text>AutoFit to window application. This maximized available space to the margins edge for written entries, while using columns, rows, and tables to delineate entries, which could be cross-referenced with other data fields.

The physical process of data entry was accomplished using a combination of institutional information from ARKS®, MEDARKS®, studbooks, husbandry manuals, veterinary records, transaction files, diet sheets, and animal inventory sheets. All of which was accomplished with little effort or trouble.

The data entry for the biology and natural history section proved the most time consumptive and labor intensive. This was primarily due to cross-referencing biometric data from field guides and reference texts and then adapting information into a concise format in both metric and imperial standard measurements. Still, a concise and cohesive style was achieved which provided the basic data for both male and female specimens when sexual dimorphism resulted in separate entries for a given species.

## **Conclusion**

While the initial data entry for the Taxon Management Record can be time consumptive, it is our belief that the benefits far outweigh any associated drawbacks. Hopefully one day, with the development of a compatible software, it may be possible to produce an interactive template to speed the process.



<b>COMMON NAME</b>		
<b>Order -</b>	<b>Family -</b>	<b>Scientific Name -</b>

#### Data

House Name					
Sex Ratio					
Date of Birth					
ISIS Number					
Studbook Number					
Point of Origin					

#### Diet

Wet Ration					
Dry Ration					
Winter Ration					
Hay Ration					
Supplement					
Produce					

#### Enrichment

Feeder Browse					
Feeder Bones					
Sprayable Scents					
Paper Products					
Polyethylene Ball					
Puzzle Feeders					

#### Training

Shift Trained					
Free Contact					
Limited Contact					
Protected Contact					
Reinforcement					
Training Protocol					

#### Exhibit

Contact	
Shifting	
Cleaning	
Sanitizing	
Landscaping	
Maintenance	

#### Biology

Description	
Subspecies	
Habitat	
Breeding	
Range	
Status	

#### Collection

Institutional Holding Intent	
Conservation Education	
In-situ Research	
Ex-situ Research	
Species Survival Program	
Population Management Program	

<b>COMMON NAME</b>			
<b>Order -</b>	<b>Family -</b>	<b>Scientific Name -</b>	

#### Data

House Name					
Sex Ratio					
Date of Birth					
ISIS Number					
Studbook Number					
Point of Origin					

#### Identification

Ear Notch					
Ear Tag					
Leg Band					
Tattoo					
GPS Transmitter					
Microchip Implant					

#### Examination


#### Treatment


#### Consent

Animal on Loan					
Veterinary Record					
Preexisting State					
Restraint/Approval					
Sedation/Approval					
Surgery/Approval					

#### Sedation

Last Sedated					
Projector Used					
Distance					
Setting/Charge					
Type of Dart					
Type of Drug					

#### Research

Necropsy Protocol? Yes ☐ No ☐

Hair Sample					
Skin Sample					
Tissue Sample					
Organ Sample					
Blood Sample					
Reproductive					

<b>MANED WOLF</b>		
<b>Order – Carnivora</b>	<b>Family - Canidae</b>	<b>Scientific Name - <i>Chrysocyon brachyurus</i></b>

**Data** [Note: This is a fictional data field and does not reflect living specimens.]

House Name	"Xima"	"Sandi"	"Andes"	"Mira"	
Sex Ratio	1.0	0.1	1.0	0.1	
Date of Birth	10/11/95	03/22/99	03/04/00	12/12/00	
ISIS Number	#4695	#5465	#5575	#5695	
Studbook Number	#1640	#1855	#3509	#3560	
Point of Origin	Lima	Little Rock	Lima	Little Rock	

**Diet**

Wet Ration	No	No	No	No	
Dry Ration	3 ½ cup Hill's C/M	3 ½ cup Hill's C/M	3 ½ cup Hill's C/M	3 ½ cup Hill's C/M	
Winter Ration	½ cup Hill's C/M	½ cup Hill's C/M	½ cup Hill's C/M	½ cup Hill's C/M	
Hay Ration	No	No	No	No	
Supplement	2 tsp Baking soda	2 tsp Baking soda	2 tsp Baking soda	2 tsp Baking soda	
Produce	¼ cup Wolf Mix	¼ cup Wolf Mix	¼ cup Wolf Mix	¼ cup Wolf Mix	

**Enrichment**

Feeder Browse	No	No	No	No	
Feeder Bones	4 Bones Mon/Fri	4 Bones Mon/Fri	4 Bones Mon/Fri	4 Bones Mon/Fri	
Sprayable Scents	Yes	Yes	Yes	Yes	
Paper Products	No	No	No	No	
Polyethylene Ball	Small, Medium	Small, Medium	Small, Medium	Small, Medium	
Puzzle Feeders	Perforated Tube	Perforated Tube	Perforated Tube	Perforated Tube	

**Training**

Shift Trained	Yes	Yes	Yes	Yes	
Free Contact	Yes	Yes	Yes	Yes	
Limited Contact	No	No	No	No	
Protected Contact	No	No	No	No	
Reinforcement	Animal crackers	Animal crackers	Animal crackers	Animal crackers	
Training Protocol	In development	In development	In development	In development	

**Exhibit**

Contact	Free contact management, but keep the animals in sight while in the exhibit.
Shifting	Not required.
Cleaning	Service holdover first (remove bedding, feed, etc.); then service exhibit area and remove fecal material.
Sanitizing	Empty and bleach automatic water's, water features, and barn floor on a weekly basis or as needed.
Landscaping	Maintain grassed areas, trees, and shrubs. Remove toxic plants (ex: nightshade) as necessary.
Maintenance	Inspect barns, holdovers, shift doors, primary containment, lights, alarm system, and fire extinguishers.

**Biology**

Description	Canid. Physical dimensions: Length 4'-4'4" (1.24-1.32 m), Height 2'6" (.74 m) Tail length 11"-1'4" (.28-.40 m), Weight male 44-50.5 lb (20-23 kg), Weight female 44-50.5 lb (20-23 kg). Lifespan: Captivity 13 years.
Subspecies	None
Habitat	Grasslands, savannas, swamp, and scrub forest.
Breeding	One litter of 2-4 pups born in January-February after a gestation of 62-66 days. Weaned at 15 weeks.
Range	Central and eastern Brazil to eastern Bolivia, Paraguay, northern Argentina, and Uruguay.
Status	USDI Endangered due to persecution and annual burning of habitat; CITIES: Appendix II; IZY: Lower Risk.

**Collection**

Institutional Holding Intent	Hold for exhibit display and breeding purposes per SSP.
Conservation Education	Understanding the decline of a species due to persecution and loss of habitat.
In-situ Research	Development of a coexistence policy and regional species recovery plans.
Ex-situ Research	Development and maintenance of a conservation education program.
Species Survival Program	Breed per SSP recommendations, (#1640 + #1855; #3509 + #3560).
Population Management Program	Not applicable at this time.

**MANED WOLF****Order – Carnivora****Family – Canidae****Scientific Name - *Chrysocyon brachyurus*****Data****[Note: This is a fictional data field and does not reflect living specimens.]**

House Name	"Xima"	"Sandi"	"Andes"	"Mira"	
Sex Ratio	1.0	0.1	1.0	0.1	
Date of Birth	10/11/95	03/22/99	03/04/00	12/12/00	
ISIS Number	#4695	#5465	#5575	#5695	
Studbook Number	#1640	#1855	#3509	#3560	
Point of Origin	Lima	Little Rock	Lima	Little Rock	

**Identification**

Ear Notch	No	No	No	No	
Ear Tag	No	No	No	No	
Leg Band	No	No	No	No	
Tattoo	No	No	No	No	
GPS Transmitter	No	No	No	No	
Microchip Implant	00000DEE54	0000F53085	00000DEE71	0000F59095	

**Examination**

Fecal Flotation	Quarterly	Quarterly	Quarterly	Quarterly	
Urinalysis	Opportunistic	Opportunistic	Opportunistic	Opportunistic	
Physical Exam	Annual	Annual	Annual	Annual	
Dental Prophy	Annual	Annual	Annual	Annual	
Radiograph	Opportunistic	Opportunistic	Opportunistic	Opportunistic	
Blood Sample	Annual	Annual	Annual	Annual	

**Treatment**

Rabies	Imrab	Imrab	Imrab	Imrab	
Canine Distemper	Solvay	Solvay	Solvay	Solvay	
Parvovirus	Duramune	Duramune	Duramune	Duramune	
Heartworm	Sentinel-monthly	Sentinel-monthly	Sentinel-monthly	Sentinel-monthly	
Anthelmintic	Sentinel-monthly	Sentinel-monthly	Sentinel-monthly	Sentinel-monthly	
Contraception	No	No	No	No	

**Consent**

Animal on Loan	Yes	No	Yes	No	
Veterinary Record	Yes	Yes	Yes	Yes	
Preexisting State	No	No	No	No	
Restraint/Approval	Yes	Yes	Yes	Yes	
Sedation/Approval	Yes	Yes	Yes	Yes	
Surgery/Approval	Yes	Yes	Yes	Yes	

**Sedation**

Last Sedated	03/04/02 - Annual	03/11/02 - Annual	03/18/02 - Annual	03/25/02 - Annual	
Projector Used	Daninject AC rifle	Daninject AC rifle	Daninject AC rifle	Daninject AC rifle	
Distance	25 meters	23 meters	25 meters	24 meters	
Setting/Charge	5 bars	5 bars	5 bars	5 bars	
Type of Dart	Daninject 3 cc	Daninject 3 cc	Daninject 3 cc	Daninject 3 cc	
Type of Drug	Telazol	Telazol	Telazol	Telazol	

**Research**Necropsy Protocol? Yes ☒ No ☐

Hair Sample					
Skin Sample					
Tissue Sample					
Organ Sample					
Blood Sample	03/04/02	02/11/02	03/18/02	03/25/02	
Reproductive					

## Acknowledgements

The authors would like to thank Dr. Jean Kjos, DVM; Dr. Anneke Moresco, DVM; Dr. Janie Hodges, DVM; and Dr. Keith Beheler-Amass, DVM of Safe Capture, Inc.; Zoologist Patti Hainley of Panthera Research; and Curator Debbie Thompson of the Little Rock Zoo for their insight towards this project. Also, special thanks to Dr. Marilyn Baeyens, DVM for her peer review of this work.

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# REMINDER

## Three Types of Data Transfer Forms Available from AAZK

Just a reminder that three different types of data transfer forms are available to requesting institutions from AAZK at no charge. These forms are designed to be used whenever an animal is shipped from one facility to another so that important information on that animal can be passed on to the receiving keeper and veterinary staffs.

The following forms are available by contacting Barbara Manspeaker at 1-800-242-4519 (U.S.) and 1-800-468-1966 (Canada), or by emailing your request to [aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com)

- Animal Data Transfer Form (ADTForm) - includes information on diet, reproductive history, general medical history/physical conditions, and enclosure/maintenance data on animal(s) being shipped.
- Enrichment Data Transfer Form (EDTForm) - includes information on behavioral history, enrichment currently used and how implemented (food, exhibit, artificial, etc.), safety concerns for animal(s) being shipped.
- Operant Conditioning Data Transfer Form (OCDTForm) - includes general background information, training specifications, training schedule, behaviors trained and methods used for animal(s) being shipped.

These forms are provided free of charge as a professional courtesy of AAZK, Inc. We encourage all zoos, aquaria and other animal care facilities to adopt the use of these forms when shipping animals. We extend our thanks to the following institutions for assisting in the printing expenses for these forms: Columbus Zoo (ADTForm), Arizona-Sonora Desert Museum (EDTForm), and Disney's Animal Kingdom (OCDTForm).

# The Water Column

By

*Dan Conklin, Senior Biologist, Florida Aquarium*  
*Bruce Elkins, Curator of Waters, Indianapolis Zoo*  
*Kevin Shelton, Associate Curator, Florida Aquarium*

## Water Clarity Issues

As aquarists and keepers we all want our systems to have clear water. Clear water makes the best exhibit tank and makes our guests feel the tank is healthy and well cared for. So, how do we maintain clear water in an artificial system?

The first step is to determine what problem you have in your tank. Now, as staff of a public aquarium without a lot of extra money, I am not talking about doing turbidity or other spectrophotometer testing here. Simply look at your exhibit. Are you seeing small particles? Are you seeing any coloration in the water? Is it clearer part of the time? The answers to these questions can point you in the right direction.

## Common Problems

If you notice small particles, it is likely your mechanical filtration is not sized properly to the system. It is most likely too small for the filtering job it is trying to do. In general, we try to filter two times the system's volume every hour. For example a 200-liter system should have a filter that will handle at least 400 liters per hour or about seven liters per minute. The filter should also be able to handle the amount of debris produced in a tank. Heavily planted exhibits, exhibits with a larger number of fish, or fish that are particularly messy will all cause increased filtration needs. Without the increased filtration you will start to see suspended particles in the water. The type of filter you are using can have a big impact as well. Rapid sand filters, which work by running water through a sand bed under pressure, will remove most particles. They can become channelized over time reducing efficiency. Bag filters and cartridge filters work by running water through a sieve of known size. Regular sizes run from 20 microns to 100 microns. If you are using a cartridge or bag filter try moving to a smaller sieve size. Keep in mind the smaller sizes will not be able to carry as high a flow rate and they will tend to clog faster.

Are you seeing any coloration in the water? A uniform yellow or greenish tinge to the water may indicate a high level of dissolved organics. While this may not be harmful in fish-only exhibits, it has been proven to be detrimental for invertebrates. The coloration will cause reduced light levels reaching photosynthetic animals and plants. It will also alter the light spectrum, absorbing some wavelengths better than others. Three of the best methods for removing dissolved organics are protein skimming, ozonation, and carbon filtration.

- Protein skimming or foam fractionation works by removing the organics as foam. In most cases you can see changes in water clarity within 24hrs (with the proper sized skimmer).
- Ozonation works by oxidizing the organics thus breaking them up. I prefer ozone application because it can give a real "sparkle" to the exhibit water. It does come with the drawback of being toxic at high levels and much care should be given to monitoring the ozone levels. Ozone when used in a protein skimmer will also cause the skimmer to be more efficient by making the organics cling to the air/water interface in the foam. Protein

skimming does not work as well on freshwater systems as it does for seawater. Freshwater simply does not create foam unless organics are very high.

- So the third method, that works well in freshwater, is filtering over activated carbon. Activated carbon removes organics by absorbing them into microscopic pores in the carbons structure. Carbon will become “full” over time and will need to be replaced when you notice the color returning to your exhibit. I prefer not to use carbon on invertebrate tanks because certain types of carbon have been known to carry phosphates. You may need to do several applications of carbon filtering before you notice a change in water clarity.

A milky coloration of the system water, often in newly setup, or holding tanks, may be associated with an imbalance in the nitrogen cycle. I have seen cases where there is a noticeably ammonia spike going on. Water changes are the best immediate treatment. Then wait for the system to cycle normally. We see this most often in cold water systems (temp < 60°F/15.56°C) because cold water does not cycle as quickly. This is generally a temporary situation.

So to summarize:

- Make sure your mechanical filtration is the proper size for the tank
- Use protein skimmers (foam fractionators) on seawater tanks
- Activated carbon for freshwater systems

And

- Ozonation on either, to add that extra “sparkle”

## References

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A quick reminder: The authors of the Water Column are always willing to answer any questions you might have. They can be about filtration systems, water chemistry, or aquatic life. If we don't know, we will find out for you! We also welcome feedback from readers about previously published columns. Questions and comments may be submitted to us by email at:

Dan: [dconklin@flaquarium.org/](mailto:dconklin@flaquarium.org/)  
Kevin: [kshelton@flaquarium.org/](mailto:kshelton@flaquarium.org/)  
Bruce: [belkins@indyzoo.com/](mailto:belkins@indyzoo.com/)

Or by mail at: Kevin Shelton, The Florida Aquarium, 701 Channelside Drive, Tampa, FL 33602.

**Thanks**

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 10th of each month to: Opportunity Knocks/AKF, 3601 SW 29th St., Suite 133, Topeka, KS 66614-2054. Please include closing date for positions available, and when setting these dates keep in mind that because of bulk-mail, most readers do not receive their AKF until the middle of the month or later. There is no charge for this service and fax or e-mail listings of positions which become available close to deadline are accepted. Our Fax is (785) 273-1980; e-mail: akfeditor@zk.kscoxmail.com< We are no longer located at the Topeka Zoo, so please note new address to avoid delays in processing.*

*The following two positions are available at the Houston Zoo, Houston, TX. For information on application procedure email Tammy at [houstonzootech@juno.com](mailto:houstonzootech@juno.com)<*

**Clerk**...performs general clerical and administrative activities such as record keeping, filing, report and correspondence preparation, telephone communications, data entry, etc. in the Zoo's veterinary hospital. High school diploma or GED and two (2) years of experience is required. General knowledge of procurement or inventory control is preferred.

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**Alaska SeaLife Center Internship** (Animal Husbandry - Avian Department)... The Alaska SeaLife Center, a non-profit organization in Seward, Alaska, is accepting applications for internship opportunities in the avian department. The Alaska SeaLife Center is dedicated to understanding and maintaining the integrity of the marine ecosystem of Alaska through research, rehabilitation and public education. This is a full time position for twelve weeks, available year-round. This position introduces basic animal care and husbandry techniques; duties include (50%) assisting in the daily care and maintenance of the Center's avian collection and (50%) assisting the Education Department. Applicants must be currently enrolled in an accredited college or university with a primary area of study in Biology, Zoology, Psychology or other animal related field. Recent college graduates may also apply. Applicants must have the ability to communicate effectively; understand and follow written and oral instruction; have a good sense of balance in order to maneuver around the exhibits and holding areas; able to lift 40 pounds; able to adapt to an ever-changing work environment; and available to work weekends and holidays. Public speaking skills are highly encouraged. This is an unpaid position, housing and/or a food stipend may be available for a limited number of candidates. Interns are responsible for all travel expenses. Inquire with Annette D'Alessandro, Intern Coordinator, Alaska SeaLife Center, P.O. Box 1329, Seward, AK 99664; Phone: (907)224-6343 Fax: (907)224-6320 ,Web Site: [www.alaskasealife.org](http://www.alaskasealife.org)

*Positions posted with AAZK, Inc. may also be found on our website at [www.aazk.org](http://www.aazk.org)*

*Also, you may want to check out the AZA Member Institution job listings at <http://www.aza.org>*

## Chapter Holds Successful Fundraiser

The Orange County Chapter of AAZK (Santa Ana Zoo) recently had our first major fundraiser: the 1st Annual "Monkey Chow" It was a Bar-B-Que dinner with prizes, keeper-led tours, and an animal presentation. We are happy to report that we raised \$3,000!

---Kristina Smith, Chapter Treasurer





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# ANIMAL KEEPERS' F O R U M



The Journal of the American  
Association of Zoo Keepers, Inc.

**OCTOBER 2002**

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Animal Keepers' Forum is published monthly by the American Association of Zoo Keepers, Inc., 3601 S.W. 29th Street, Suite 133, Topeka, KS 6661-2054. Ten dollars of each membership fee goes toward the annual publication costs of Animal Keepers' Forum. Postage paid at Topeka, KS.

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### **AAZK PUBLICATIONS - CONTINUING DATA COLLECTION**

Biological Values for Selected Mammals, 3rd Edition - Jan Reed-Smith, John Ball Zoo

AAZK Enrichment Notebook - Lee Houts, Folsom City Zoo

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## About the Cover....

*This month's cover features a Lowland Gorilla (*Gorilla g. gorilla*) drawn by Rose M. Sharp, a gorilla keeper at the Cleveland Metroparks Zoo, Cleveland, OH. Native to equatorial Africa, lowland gorillas live in family groups comprised of a dominant silverback male, young blackback males, females and their offspring. The younger blackback males help the dominant male defend the family and its territory, but will sometimes challenge the older male for breeding rights with the group's females. They are the largest of the great apes, with males weighing as much as 650 lbs. (295kg) with a height of up to seven feet (2.1m). They have powerful jaws which they use to chew their diet of vegetation. Despite their somewhat fierce appearance, the species tends to be shy and retiring, avoiding confrontation when possible. There is no specific breeding season and females normally produce a single offspring after a gestation period of 225 days. They are endangered throughout their range due to habitat destruction and poaching. Thanks, Rose!*

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Authors are encouraged to submit their manuscripts on a disk as well as in hard copy form. Manuscripts submitted either on disk or electronically as attachments to an email should be submitted in Microsoft WORD. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than 5.5" x 8.5"** (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy black and white **or** color prints (minimum size 3" x 5" [8cm x 14cm] ) are accepted. Clearly marked captions should accompany photos. Please list photo credit on back of photo. Photographs may be submitted electronically as either JPEG or TIFF file attachments.

Articles sent to Animal Keepers' Forum will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for AKF. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone, fax or email contributions of late-breaking news or last-minute insertions are accepted as space allows. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (785) 273-1980; email is [akfeditor@zk.kscoxmail.com](mailto:akfeditor@zk.kscoxmail.com)

**Deadline for each regular issue is the 10th of the preceding month.**

**Dedicated issues may have separate deadline dates and will be noted by the editor.**

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E-Mail Addresses: You may reach Barbara Manspeaker at AAZK Administrative Offices at: [aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com) You may reach Susan Chan and Animal Keepers' Forum at: [akfeditor@zk.kscoxmail.com](mailto:akfeditor@zk.kscoxmail.com)

**AAZK Website Address: [www.aazk.org](http://www.aazk.org)**

**BFR Website: <http://bfr.aazk.org>**

# *Scoops & Scuttlebutt*



## **Chapters Donate to AAZK Projects/Programs**

The AAZK Board of Directors and the staff of AAZK Administrative Offices would like to thank the following Chapters for their generous donations to the Association to benefit its projects and programs: North Carolina AAZK Chapter (North Carolina Zoo, Asherboro, NC) \$200.00 with \$100 designated for the Endowment Fund and \$100 designated for general operating expenses; the Orange County Chapter of AAZK (Santa Ana Zoo, Santa Ana, CA) \$200 designated for the Adopt-a-School Program in Kenya (see May 2002 *AKF* for details of this program). The Orange County donation came as a result of their highly successful first-ever fundraiser since the Chapter was formed. See details of how they did it under Chapter News this month.

## **Water Column on Hiatus**

The Water Column will be taking the next few months off to develop a new series of articles. So look for us back again in January 2003! In the meantime, please feel free to send us your questions. We will continue to answer them in forthcoming articles. You may send your questions via email to: Dan: [dconklin@flaquarium.org](mailto:dconklin@flaquarium.org); Kevin: [kshelton@flaquarium.org](mailto:kshelton@flaquarium.org); or Bruce: [belkins@indyzoo.com](mailto:belkins@indyzoo.com)<

## **Opportunity to Support Field Conservation via AZA in Action**

Is your Chapter looking for new ways to get involved in field conservation? Want to help raise money for tremendous *in situ* projects around the world? Visit AZA in Action, a Web-based catalog of endorsed projects focusing on conservation, research, and education efforts worldwide. Currently featuring 23 projects covering a wide range of geographic regions and taxa, AZA in Action listings include sections on volunteer opportunities (let's go survey some otters!) and resources needed (anybody have extra re-bar lying around? Puerto Rican crested toads want to know!). For more information, visit [www.aza.org/action](http://www.aza.org/action) today. If you'd like to submit a project for listing, please contact [webcatalog@aza.org](mailto:webcatalog@aza.org)< Projects must be included in an AZA Conservation and Science program's Action Plan to be included in the Web catalog. AAZK Chapters contributing to AZA in Action projects will receive a special mention on the Web site. For further information contact: Ruth Allard, AZA Conservation Biologist/Interim Coordinator for Butterfly Conservation Initiative at [RAllard@aza.org](mailto:RAllard@aza.org); phone - (301) 562-0777, Ext. 239; Fax - (301) 562-0888.

## **Seahorse Manual Published**

The John G. Shedd Aquarium has announced the release of the first comprehensive manual on the management, care and husbandry of seahorses. Developed by Shedd in conjunction with "Project Seahorses", the 57-page manual entitled *Seahorse Husbandry in Public Aquaria* provides critical information for institutions looking to design and develop a successful seahorse exhibit. Also listed is an international network of seahorse program coordinators to enable institutions to share information. The manual is currently available on CD-Rom only. For more information, contact Jeff Mitchell of Project Seahorse at [jmitchell@sheddaquarium.org](mailto:jmitchell@sheddaquarium.org) or call (312) 692-3185.

## **Project Seeks Raptor Slides**

Two keepers at the Healesville Sanctuary in Australia who work with raptors are putting a book together about shows/presentations. They are seeking good quality slides worldwide, particularly from zoos past or presently doing bird shows, of flight arenas, weathering access, perching, weighing equipment, tracking equipment, gloves, hoods, jesses and other bird equipment, and good shots of the birds themselves. They are seeking slides representative of anything to do with the training and presentation aspects of bird shows. Any written information on sound systems, seating, diets, supplements, housing, perching, tracking equipment would be hugely beneficial to the project. Acknowledgements will be given for any slides or written information supplied and slides will be returned. If you can help in any way, please send items by the end of October to the following address: Marcia Standfield, Senior Raptor Keeper, Healesville Sanctuary, Vic 3777, Australia.

## **Regional Keeper Exchanges Sought**

The Cincinnati Zoo would like to try some regional keeper exchanges. These would be with facilities within a 5-6 hour drive of the Cincinnati area. If interested please contact Dawn at [dawn.strasser@cincinnati-zoo.org](mailto:dawn.strasser@cincinnati-zoo.org)<

# AAZK Announces New Members

## New Professional Members

Ilana Cobban and Michael Jeffries, **Roger Williams Park Zoo (RI)**; Pete Climie, **The Philadelphia Zoo (PA)**; Kate Perry, no zoo listed (NC); Layla Dampier, **Jacksonville Zoo (FL)**; Marcy Kostenbauder, **Central Florida Zoological Park (FL)**; Erin Dowgwillo, **Birmingham Zoo (AL)**; Troy Christensen and Joann Didlake, **Hattisburg Zoo (MS)**; Ron Evans and Alexandria Robbins, **Cincinnati Zoo & Botanical Garden (OH)**; Michelle Pratt, **Detroit Zoo (MI)**; Shelly Wagner, **St. Louis Zoo (MO)**; Teresa L. Shannon, **Topeka Zoo (KS)**; Eric Brittingham, **Dallas Children's Zoo (TX)**; Rebecca Leitner, **Moody Gardens (TX)**; Jennifer Jenkins, **Austin Zoo (TX)**; Michol Ciezki, **Cheyenne Mountain Zoo (CO)**; Amanda Ista and Sandy Letson, **Utah's Hogle Zoo (UT)**; Denise Buckley, **Chaffee Zoological Gardens (CA)**; Danielle S. Stith, **Oakland Zoo (CA)**; James Traverse, **Scaramento Zoo (CA)**; and James H. McNeal V, **Woodland Park Zoo (WA)**.

## Renewing Institutional Members

Prospect Park Zoo  
Brooklyn, NY

Soith Florida Prosimian Enrichment Center  
Miami, FL

Jason Abels, Director

Busch Gardens  
Tampa, FL

Micke Grove Zoo  
Lodi, CA

Kentucky Reptile Zoo  
Slade, KY  
Jim Harrison, Director

## Condors Head South of the Border

For the first time in 50 years, California condors are returning to south of the border, the "southernmost extension" of a range that stretched from Mexico to Canada. In an international expansion of the recovery program, six California condors have been flown by private airplane to Mexico, where they were transferred to a mountaintop pen in the rugged Sierra de San Pedro Martir National Park for acclimation and eventual release. They will spend one to two months at the site which is about 6,000 feet above sea level and covered in old-growth pine forests. This shipment of birds was a mix of juvenile males and females.

Up to 20 condors are slated for release at the remote Baja California site as part of a \$40-million recovery program to "establish two wild populations and one captive population of condors, each with 150 birds, including a minimum of 15 breeding pairs apiece," according to Bruce Palmer, the California condor recovery coordinator for the U.S. Fish and Wildlife Service.



California condors once ranged over most of North America, including Mexico. After their numbers dwindled to just 22 specimens, biologists began an aggressive program to capture the last of the free-flying condors and breed them in captivity. Both the San Diego Zoo and the Los Angeles Zoo have bene involved in the successful captive breeding program established in the late-1980s.

There are currently about 35 wild birds in California, another 25 in Arizona, and some 130 in captivity Source: *GREENlines* Issue #1684 8/15/02 and AP wire releases of 7/24/02



# Coming Events

**The Zoo Registrar Association 2002 Conference** 10-12 Oct 2002 - in Wichita, Kansas, U.S.A. and hosted by Sedgwick County Zoo. Hotel will be the Wichita Marriott Hotel, reservations Number: (800) 610-0673 (available 8:00-5:30 Central time, Mon-Fri.). For more information please contact Conference Chairperson Aletha Kinser, Sedgwick County Zoo, registrar@scz.org (316) 942-2213 ext. 203, Program Chair Paul Louderback, Tulsa Zoo and Living Museum, Plouderback@ci.tulsa.ok.us (918) 669-6225 or visit the ZRA website: <http://www.zra.homestead.com/> This is an excellent chance to meet and network with other zoo registrars. The program will be records, permitting and animal shipping oriented. There should be an ISIS representative present.

**Cuban Amazon Parrot (*Amazona leucocephala*) PMP/Consortium Master Plan Meeting II** - 9-10 November, 2002. Hosted by Miami Metrozoo, 12400 SW 152 St., Miami, FL 33177-1499. An Ice Breaker will be held for participants on 8 November 2002, in the new temporary exhibits building called Dr. Wilde's World. No registration cost is involved and some meals are provided. For further information please contact: Rachel Watkins Rogers, Zoo Registrar and Regional Studbook Keeper/Species Manager; [RRogers@miamidadc.gov](mailto:RRogers@miamidadc.gov); (305) 251-0400, ext. 253; Fax (305) 251-5701.

**International Marine Animal Trainers Association (IMATA) 30th Annual Conference** - 10-15 November 2002 in Orlando, FL. Hosted by SeaWorld Orlando. Contact Al Kordowski at [alan.kordowski@seaworld.com](mailto:alan.kordowski@seaworld.com) or visit [www.imata.org](http://www.imata.org)

**The Ninth North American Crane Workshop** - 21 to 25 January 2003 in Sacramento, CA. Plans for the workshop include an ice-breaker on Tuesday evening, technical sessions on Wednesday and Friday, and an all-day field trip on Thursday, with an awards banquet on Friday evening. For more information contact Tom Hoffmann, NACWG Treasurer, at [Thoffmann@hoffmanns.com](mailto:Thoffmann@hoffmanns.com)

**Eleventh Annual International Association Of Avian Trainers and Educators Conference** - 12-15 February 2003 in Portland, OR. Hosted by the Oregon Zoo and held at the DoubleTree-Lloyd Center Hotel. For more information contact Cathi Wright ([wrighte@metro.dst.or.us](mailto:wrighte@metro.dst.or.us)) or Shannon LaMonica ([lamonicas@metro.dst.or.us](mailto:lamonicas@metro.dst.or.us)) or call them at (503) 220-5713.

**Association of Avian Veterinarians 24th Annual Conference & Expo** - 25-29 August 2003 in Pittsburgh, PA. To be held at Pittsburgh's Westin Hotel and the David L. Lawrence Convention Center. Theme is "Take Flight in Pittsburgh". Program will include lectures and Master Classes. Call for Papers - you may submit applications electronically, by mail or by fax. To submit

on the Internet go to [www.ConferenceOffice.com/aav](http://www.ConferenceOffice.com/aav). If you wish to receive an application form or more information on presenting call the AAV Office at (303) 756-8380, ext. 13. Deadline is 25 October 2002. Fax# is ((303) 759-8861.

**First International Conference on Zookeeping in 2003** - The Netherlands - Will be held between 2-10 October at Birdpark Avifauna. For further information please visit: <http://es.geocities.com/jxarles20>

**Sixth International Conference on Environmental Enrichment** - 2-7 November 2003 in Johannesburg Zoo, South Africa. The provisional conference attendance fee is US\$250, but this will be confirmed and reduced based on price and currency fluctuations towards the end of 2002. South Africa is an exciting destination that boasts a number of world class zoos. Further information can be obtained from our website at [www.jhbzoo.org.za](http://www.jhbzoo.org.za) Please feel free to contact Mathew van Lierop who will be coordinating the conference at +27 11 646 2000 ext 233 or at [mathew@jhbzoo.org.za](mailto:mathew@jhbzoo.org.za)

**NOTICE:** The International Scrow Summit/the 2nd Symposium on Capricornis and Related Species, originally planned for 2002 by the Japan Scrow Center has been delayed until the Fall of 2004. Details will be published as they become available.

## 2003 AZA Regional Conferences

Eastern Regional - 26-29 March 2003. To be hosted by the Riverbanks Zoo & Garden, Columbia, SC.

Central Regional - 30 April - 3 May, 2003. To be hosted by the Milwaukee County Zoo, Milwaukee, WI.

Western Regional - 14-17 May 2003. To be hosted by the Calgary Zoo, Calgary, Alberta, Canada.



## RATS AND MICE

Bill & Marcia Brant  
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Archer, FL 32818

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FAX (352) 495-9781

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# **Websites of Interest/Manuals Available on Various Topics**

## **Nutrition Advisory Group Announces Website and Proceedings Sales**

The Nutrition Advisory Group is happy to announce the new NAG website. It is located at <http://www.NAGonline.net> (note the .net extension). Currently, the site contains information about the NAG, husbandry manual nutrition chapters, the published NAG technical papers and other nutrition resources. We hope that you will find the site a valuable resource.

We are also pleased to announce that the NAG proceedings from 1999 and 2001 conferences are now available for purchase. The ordering information is on the web site ([www.nagonline.net](http://www.nagonline.net) under "nag conference"). There is a form that can be printed out and mailed with your payment to Mike Maslanka (address on the form). The cost is \$30 per copy plus \$4 per copy shipping in the US. There is also a table of shipping costs to many other countries. If you are ordering multiple copies of the same proceedings to the same address, we may be able to offer a reduction on shipping. E-mail the address shown on the web site for more information.

The proceedings from the 1995 and 1997 conferences are out of print and cannot be ordered. We hope to make these available on the web site sometime this autumn/late this year. --submitted by Wendy Graffam, Ph.D., NAG web site facilitator.

## **Enrichment Online Website Announced**

The Fort Worth Zoo, in conjunction with the American Institute of Biological Sciences, is proud to announce that the Enrichment Online website is now active and available to animal managers worldwide. The key component of the site is a search engine for taxa-specific enrichment ideas. In addition to accommodating detailed searches for enrichment items, the database is interactive and allows users to input their own ideas and provide comments on items already in the database. We have already received registrations from France, Australia, Kuwait and Venezuela.

Supplemental materials on the site include hot links to other enrichment-related web sites, a list of periodicals and published materials, and a detailed Help section. We hope users will find this a comprehensive and valuable resource for integrating enrichment into the management of captive animals in both zoos and laboratories.

Log on today and share your enrichment ideas with colleagues from around the world at [www.enrichmentonline.org](http://www.enrichmentonline.org)<

## **Treeroo Husbandry Manual Now Available**

The newly revised edition of the Tree Kangaroo Husbandry Manual is now available. You can make your orders by contacting: Valerie Thompson, Zoological Society of San Diego, P.O. Box 551, San Diego, CA 92112-0551; Phone: 619-685-3226; Fax: 619-232-4117; email: [Vthompson@sandiegozoo.org](mailto:Vthompson@sandiegozoo.org)

Make checks for \$25 payable to AAZK KC TKSSP. Mail to: Jacque Blessington, Kansas City Zoo, 6700 Zoo Drive, Kansas City, MO 64131.

A special thank you goes out to Judie Steenberg, retired keeper from the Woodland Park Zoo, Seattle, WA, for working so diligently on following through with this project, her work is much appreciated.

## **Great Ape Enrichment Manual Available**

The Jane Goodall Institute and the European Association of Zoos and Aquariums (EAZA) have jointly published a softcover manual on Great Ape Enrichment which incorporates enrichment ideas from zoos across Europe. It is available in English, Spanish and French. The cost is eight Euros plus postage. For further information you may contact Carsten Knott from the Frankfurt Zoo at [carsten.knott@t-online.de](mailto:carsten.knott@t-online.de)

## **Interesting Websites to Check-Out from ZooNews Digest**

<http://www.survivaldesign.com>

<http://www.orangutan.com/theprojects/NyaruMenteng/nyarumenteng.htm>

<http://www.arkive.org.uk>

<http://www.tapirback.com/tapirgal/iucn-ssc/tsg/>

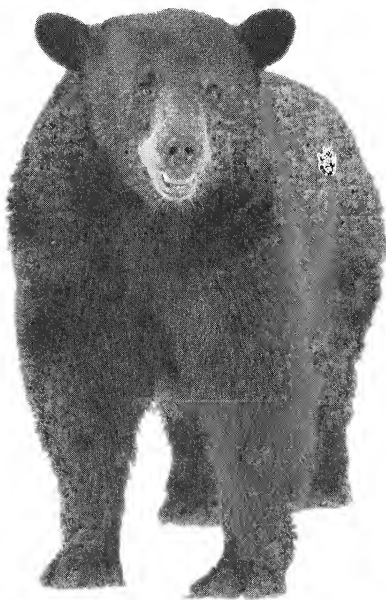
How do you formulate life-saving milk replacers to meet each species' special nutritional needs?

The answer—Milk Matrix from Zoologic® Nutritional Components.

Milk Matrix is a line of 7 milk replacers that can be used alone or blended to closely simulate the protein, fat, and carbohydrate content of the milk you're substituting.

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# Animal Behavior Management Committee Update

*By Beth Stark – Animal Behavior Management Committee Chair*

The Animal Behavior Management Committee (ABMC) has had a busy year, with several projects in the works. We were saddened by Wendy Shaffstall's resignation from the committee and wish her well. We are thrilled to welcome Jay Pratte from the Dallas Zoo to the Committee.

The Animal Behavior Management Committee was established two years ago to provide the AAZK membership with a resource for animal training needs. Our objectives are to:

- Advance the knowledge of animal training in a zoological setting
- Promote the use of operant conditioning in animal management and husbandry
- Develop training tools for animal care staff and managers
- Provide resources and training for animal handlers and managers who are interested in pursuing training programs within individual institutions.

During the past year, we have been working on several projects - some of which will come to fruition during this year's conference.

## *Training Database*

Our biggest and most comprehensive project is the compilation of a database of behaviors that have been trained in zoological institutions. We have recently mailed surveys to every AZA accredited institution in hopes of obtaining a list of behaviors that have been trained. As animal training becomes a larger part of daily husbandry, we hope to provide a resource for keepers all over the country. Included in the database will be behaviors trained for each species, contact information for each taxonomic group, information about bridging stimuli and reinforcers, as well as information about each institution's programmatic approach to animal training. Be on the lookout for these surveys. We encourage everyone to participate so we can all benefit from each other's knowledge and success!

## *Training Bibliography*

The Animal Behavior Management Committee and the Enrichment Committee are working to provide the membership with a comprehensive bibliography of training and enrichment journal articles and papers. This bibliography will eventually be available through the AAZK website and will be in a searchable database format. Stay tuned for more details.

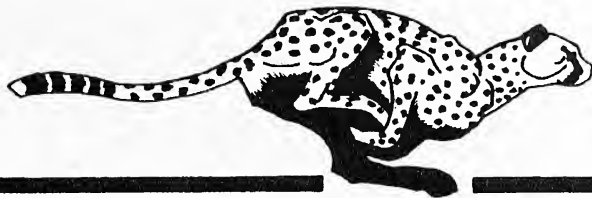
## *Committee Web Page*

Keep an eye on the AAZK website. The ABMC is developing a web page for this site that includes information about training in zoos, safety issues and concerns, the AAZK Glossary of Animal Training Terms, the searchable database of trained behaviors (mentioned above), links to other animal training sites and more!

## *Conference Workshops*

While we strive to provide AAZK members with resources to use at their home institutions, the ABMC recognizes the need for keepers to discuss training projects and network with each other. Therefore, we presented two workshops at the National Conference in Kansas City, one on the principles of animal training, and another on training specific behaviors. We also collaborated with the AAZK Enrichment Committee to offer an animal training and enrichment video night.

We're excited about our many projects and appreciate the feedback we've received so far. Please let us know if there's anything else we can do to provide you with additional resources. Happy training!



# REACTIONS

## *A Question and Answer Forum for the Zoo Professional on Crisis Management*

**By William K. Baker, Jr., Curator**  
**Little Rock Zoo, Little Rock, AR**

### **Question**

How do I decide when it's appropriate to use a net versus a dart gun?

### **Comments**

Like any given situation, there are always exceptions to the rule. While chemical immobilization is becoming safer and more of a mainstream practice, there still exist times when it is best to physically capture an animal.

### *Conditions:*

1. The available staff members may be unfamiliar with the mechanics of loading a dart or operating a projector.
2. Available staff members may be unfamiliar with the technical aspects of chemical agents, dosage levels, and how to mix separate agents into a "cocktail".
3. Due to DEA regulations, certain Scheduled Narcotics could be unavailable for use due to restricted key and/or combination access to the drug safe.
4. The physical size of the animal may restrict darting. This would most likely occur when dealing with reptiles, smaller mammals and primates, and smaller birds.
5. The animal has no personal or species history of serious aggression. In other words, the animal has a non-threatening disposition.
6. The specimen may be of advanced age or have pre-existing medical conditions that render darting a questionable option.

### *Equipment:*

1. Pole Nets - This would be the most common capture net seen in the zoological industry. Pole nets come in a variety of sizes and meshes, which is dependent on the size, type, and weight of the animal. Options include cord locks, grips, extensions, and pole combinations.
2. Cast Nets - Essentially a circular net that is tossed by hand over an animal. The net works by enveloping and forcing the animal into a prone position on the ground. Needless to say, this takes a great deal of practice to master.

3. Mist Nets - These are ultra-fine mesh nets that are typically strung between two objects. The net is nearly invisible at even short distances. The animal either flies or runs into the net and is entangled.
4. Drop Nets - These are heavy grade mesh nets that are either dropped over a target area or delivered by a ground fired cannon system. They are especially useful for catching large groups of animals over a baited area and historically have been used by numerous wildlife agencies.
5. Net Guns - Essentially these are rifles that have been modified to fire a projectile net over a considerable distance. They are typically offered in two models, air to ground capture and ground capture. Either style requires advance training and practice to become proficient in their use.

*Use:*

1. Pole Nets - Almost always an effective option except when either the size of the specimen, aggression, or both prevent usage. When capturing specimens in an exhibit, two staff members are a plus to direct route of travel around the interior of the exhibit to the person with the net.
2. Cast Nets - In my experience these are most effective with small ground dwelling birds or mammals and fish. They are somewhat limited in application.
3. Mist Nets - Best when used for capturing birds or flying mammals.
4. Drop Nets - Highly effective in use for birds, smaller mammals, and other social gatherers. The drawback is the time factor to acclimate the specimens to a baited area. Also, from time to time, propellant charges on cannon nets will malfunction causing serious setbacks in time for resetting and desensitization of animals once spooked by the first firing.
5. Net Guns - Highly effective against small to medium sized mammals and very accurate at close range. These are not only nice for capture at ground level, but at reasonable distance can be used to net an animal in a tree or on a structure.

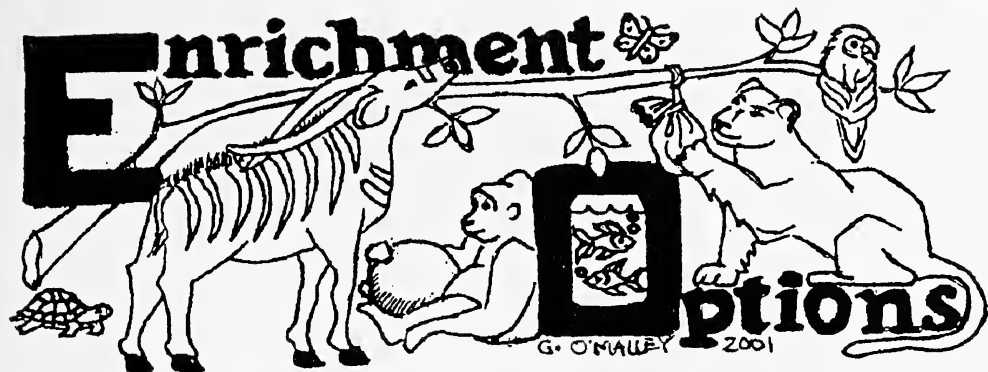
*Cautions:*

1. Every system is a function of the care and maintenance that it receives. If it is thrown in a closet or left in the weather, don't be surprised when it fails.
2. Every system requires practice to use effectively.
3. The ability to effectively read animal behavior is a critical part of the situation and its resolution.
4. The more advanced the system, the more it costs.
5. Always works in teams when attempting to live catch an animal. It makes the procedure more effective, and safer for the personnel and the animal.

**Next Month:** What do you prefer and recommend in regards to transportation in a crisis situation, vehicle or on-foot?

If you would like to submit a question for this column or have comments on previously published materials, please send them to AAZK, Inc., 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 Attn: Reactions/AKF

(About the Author: Since 1985 Bill has been active in the fields of science, zoology, and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team Leader, ERT Member, Large Mammal Keeper, Senior Keeper, and Zoo Curator at various zoological facilities. His area of research is crisis management in zoological institutions, which draws upon practical experience and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)



*By Jan Roletto, Sequoia Park Zoo  
and Dawn Neptune, Utah's Hogle Zoo*

## **A Tiger Toy and Primate Puzzle Feeder**

*submitted by Dee Nelson, Area Supervisor-Asian Forest Complex  
El Paso Zoo, El Paso, TX*

Thanks to Stephanie De Gesero from the Great Plains Zoo in Sioux Falls for the outstanding enrichment idea in the June 2001 Animals Keepers Forum. I called our local Barnes and Noble and they were very happy to give me their tubes. We attached a chain at one end and hung it vertically for our male tiger to destroy. We usually get two sessions from one tube. He claws and pulls at it, eventually forming a spiral. During the session, he usually pulls it down from the chain.

This idea was adopted into a puzzle feeder for our primates. Using the cardboard roll from upholstery fabric (cut into 3 or 4 lengths), slits were cut about halfway into the rolls. Tabs from cereal boxes were then inserted to make obstacles for items to have to pass through before exiting an open end of the tube. The slits were staggered on either side to add to the complexity.

The Siamangs still have their cardboard feeder, but our Lion-tailed Macaques destroyed theirs. Although destroying it was enriching, we decided they needed something sturdier, so 2" PVC was used. Holes were drilled in the top of a 6-8" length to insert jute or 12-gauge chain to use as a hanger. Slits were cut in the PVC and the cereal box tabs were used as before. We do have to make new inserts periodically, but we keep a template on our workbench to make it easier.

## **Enrichment Graphics at the Folsom Zoo**

*Editor's Note: In the August 2001 issue of AKF, we introduced you to some of the Enrichment Graphics utilized by the staff at the Folsom City Zoo, Folsom, CA, to help educate their visitors about the animals and the importance of enrichment in a captive setting. The following two enrichment graphic panels provide visitors with information and an opportunity to help with the zoo's Enrichment Program. The actual text from these panels is presented here as well. We thank AAZK Enrichment Committee Chair and keeper at Folsom City Zoo for this contribution.*


### **Natural Carnivore Feedings Today**

Wild carnivores - the meat eaters - hunt other animals to survive. Teeth and claws, strength and agility, good eyesight and intelligence, and parental schooling equip these animals to survive. Hunting is their natural behavior.

The Folsom City Zoo periodically provides defrosted whole animal carcasses of quail, rodents or rabbits as an important addition to regular diets. Carcass feeding provides not only important nutritional benefits, but necessary emotional and psychological advantages as well. In fact, zoo raptors - the hunting birds - are fed only whole carcasses, since feathers, fur and bones are essential for their long-term good health.

- In some exhibits more than one animal will share a carcass. This requires using social and negotiation skills, and is an important part of their social hierarchy.
- Natural feeding is a normal and important part of their lives.

Folsom Zoo staff takes care to assure that the purchased animals are raised and euthanized humanely. Occasionally, fresh road-killed deer are brought to the Zoo by CalTrans or road crews. The deer are frozen (and thawed before feeding) to insure freshness and to render them parasite-free.







## Folsom City Zoo





### Behavioral Enrichment Program

#### Natural Carnivore Feedings Today



Please be aware that there will be scheduled feeding today. If you or your children might be disturbed by the natural feeding of carnivores, you may want to avoid the exhibit areas before.



The Folsom City Zoo periodically provides whole animal carcasses made to order. Feeding of carnivores is a regular routine and is a very important part of the diet. Proper feeding provides nutritional benefits and emotional and psychological advantages. In fact, zoo raptors - the hunting birds - are fed only whole animal carcasses. Please be aware that there will be scheduled feeding today. If you or your children might be disturbed by the natural feeding of carnivores, you may want to avoid the exhibit areas before.



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**Cougars will have a road Kill Deer at 1:30pm**

**Black Bear "Fisher" will have a rabbit.**

Natural Carnivore Feeding Graphic



## The Nose Knows

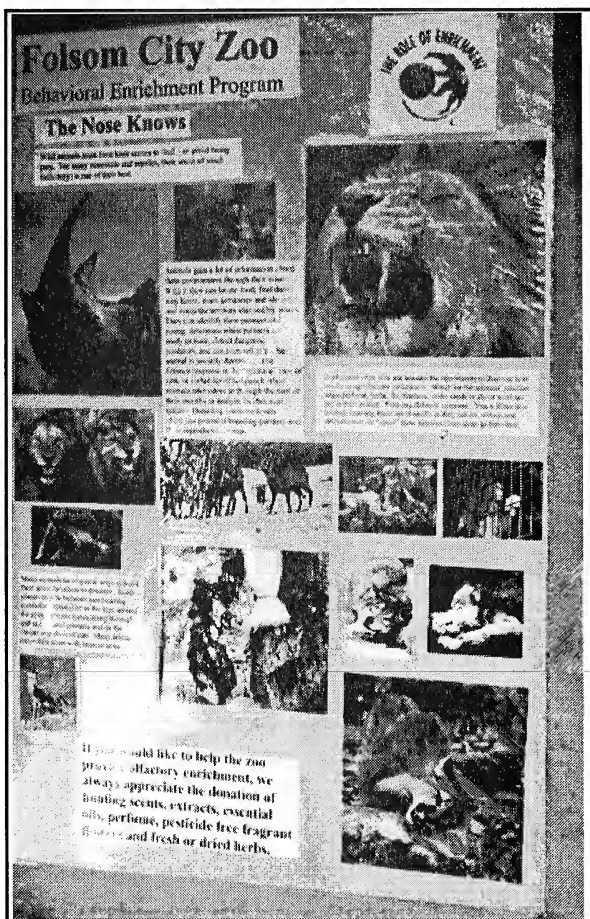
Wild animals must have keen senses to find - or avoid being - prey. For many mammals and reptiles, their sense of smell (olfactory) is one of their best.

Animals gain a lot of information about their environment through their noses. With it they can locate food, find their way home, mark territories and identify and avoid the territory claimed by others. They can identify their partners and young, determine when partners are ready to mate, detect dangerous predators, and can even tell if another animal is socially dominant. The *flehmen* response is the "grimace" face of cats, or the curled lip of hoofstock when animals take odors in through the roof of their mouths and analyze its chemical nature. Detecting hormone levels identifies potential breeding partners and their reproductive status.

Many animals have special ways to leave their scent for others to discover. Scent glands may be between toes (leaving scented footprints) or on the legs, around the eyes, between horns, along the back and tail, around genitalia, and on the cheeks and chins of cats. Many animals leave their scent with feces or urine.

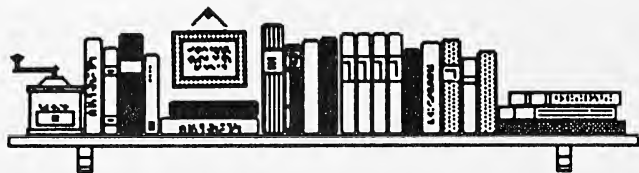
Zookeepers often give our animals the opportunity to discover new smells using olfactory enrichment. Watch for the animals' reactions when perfume, herbs, fur, feathers, snake sheds or sheep wool are put into their exhibit. Note any *flehmen* response. You will see zoo animals enjoying these novel smells as they rub on, urinate and defecate over, or "spray" these items to claim them as their own.

If you would like to help the zoo provide olfactory enrichment, we always appreciate the donation of hunting scents, extracts, essential oils, perfume, pesticide-free fragrant flowers and fresh or dried herbs.



*(Ideas appearing in this column have not necessarily been tested by the editors for safety considerations. Always think ahead and use good judgement when trying new ideas. You are invited to submit materials for the Enrichment Options Column. This might include recipes, toys, puzzle feeders, olfactory enrichment ideas, etc. Drawings and photos of enrichment are encouraged. Send to: AKF/Enrichment, 3601 S.W. 29th St., Suite 133, Topeka, KS 66614-2054. Eds.)*

Visit the AAZK Enrichment Website - [www.enrich.org/aazk](http://www.enrich.org/aazk) or to join the  
Enrichment Listserve, email [jackbell@humboldt1.com](mailto:jackbell@humboldt1.com)  
An archive of past postings may be viewed at [www.cava.org/enrich](http://www.cava.org/enrich)



# Book Review

## **Dolphins of the World**

By Ben Wilson

Illustration by Harriet Corbett

Copyright 1998; ISBN # - 0-89658-400-3

Voyageur Press, Inc., 123 North Second St.,

P.O. Box 338, Stillwater, MN 55082 USA

132 pgs. Hardback cover Price: \$29.95 US

*Review by Jodie Baker*

*Curator of Marine Mammals*

*Indianapolis Zoo, Indianapolis, IN*

*Dolphins of the World* did just what the insert on the book claimed it was meant to do, which is to introduce the reader to the beauty, biology, and mystery of dolphins. The book was easy to read and brought up a fair amount of interesting points to think about as far as all dolphins are concerned. It touched on some of the latest scientific research and addressed in an interesting light how humans fit in to a dolphin's life. The photographs were spectacular and well placed throughout the book. The dolphin guide in the front of the book, noting the different species and their average lengths was a very informative graph for the average reader.

The author was able to spark your interest in dolphins and their environment. The author also was able to touch on all different aspects involving dolphins. He was able to talk about dolphin's origins and how they came to be. He further touched on oceanic, coastal, and river dolphins giving understandable explanations as to their differences. There was also a chapter on stranded dolphins. The aspect of stranding and its causes is not always presented and it was interesting to see this information. The presentation gives you a feeling that you might be able to help prevent some strandings by respecting the environment.

There was a very informative section on why dolphins' are shaped the way they are and what the function of the shape is. The author hits upon the dolphins as diving machines and gives you an overview of their senses. There was also a section on dolphins being born in the wild and how difficult it is to survive in the ocean environment for a newborn. The text was very well written and informative while giving you a fair amount of information about dolphins and their lives. Throughout the book the author uses anecdotes and fables to help the reader understand the adaptations and abilities of the dolphin.

It was nice to see that the author touched on multiple topics but, kept the text understandable for the laymen. The book lends itself to be very easy to read and left you wanting to find out more information about dolphins. The information given out in the book was only basic in origin so, if you want to find out more specific information or more detailed scientific information on dolphins this would not be the book to use. The photography was spectacular. Nearly half the pages are taken up with some of the most awe-inspiring pictures I have seen. It was nice to see the photographs interspersed with the text. Some of the photographs really represented the dolphins well in particular were the underwater shots. It is difficult to express how much the photographs enhanced the book.

I really found the book very enjoyable to read and the photographs a pleasure to look at. The book covers a wide range of topics in an easy to read and understandable way. It gives the reader the desire to take care of the ocean environment in general and more specifically dolphins. It follows through with suggestions on how to become actively involved. *Dolphins of the World* is a very sound and enjoyable book for anyone interested in finding out some basic information about dolphins.

## **Don't Step Backwards**

By Lynda Staker

2001 Updated Second Edition

Copyright 1998

This manual is available in the USA through:

Perfect Pets Inc., 23180 Sherwood Road

Belleville, MI 48111-9306

314 pages, 3 ring-binder, retail price of \$49.95

*Review by Jacque Blessington, Zoo Keeper  
Kansas City Zoo, Kansas City, Missouri*

Lynda Staker currently works in the field of caring for, management, rehabilitation, clinical diagnosis and treatment of disease of Australian marsupials (excluding koalas and wombats). She has worked in this field for over 14 years. Lynda has reared/rehabilitated over 20 different species of marsupials which included rearing several hundred marsupials, predominantly macropods. She has also set up a wildlife hospital in her home and has been successful with the treatment of several hundreds of diseased/injured marsupials.

This manual is a compilation from a four-day course that incorporates over 900 slides and is accompanied by a training manual with over 300 pages, covering the entire proceedings. Keeping this in mind, there are a lot of photographs included in the manual whose clarity is not always the highest quality. And some of the text is wrought with typing and grammatical errors. That said, the book is a "must have" for anyone that cares for macropods, possums, gliders, quolls, echidnas, and bandicoots.

Though in the States we don't encounter much by way of rescue and rehabilitation for Australia's native fauna, the book is a valuable tool for many aspects. The first part of the manual also covers in-depth information on hand-rearing of the above mentioned species. Even if, as a caregiver, you aren't hand-raising any animals, the information is pertinent in understanding the development and characteristics of young marsupials.

The second half of the manual is dedicated to interesting facts and diagnosis and treatment of disease, ailments and injuries with input from several veterinarians and wildlife rehabilitators. The information, though medical in content, is written in laymen's terms and easy to read and understand.

Having worked with macropods in captivity over 12 years myself, I found this manual to be a very valuable resource and should be in anyone's library who works with Australia's native marsupials. Ironically, having never hand-raised any macropod myself, our staff was presented with hand-raising a red kangaroo one week after I agreed to this book review and I am very grateful for having this resource available.

## **MOVING?**

Please let us know when you change your address! It now costs AAZK 99 cents every time an *AKF* is returned because of an incorrect address. Call 1-800-242-4519 (U.S.) or 1-800-468-1966 (Canada) or e-mail [aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com) to report your new address.

# Cooperation (and fun) for Education

*By Stephanie Scanlin  
Former Hospital Keeper  
Gladys Porter Zoo, Brownsville, TX*

Cooperation among zoo staff can often lead to win-win results. In this particular case, the result of a personal interest in the zoo hospital led to a useful tool for the education department.

Initially, I was interested in making a collection of various footprints using ink and paper. Not only was this method a bit messy, but you only had a 2-D representation of the foot. After buying (and playing with) two cans of Play-doh®, it was clear this was not an ideal product for obtaining and preserving footprints either. The other common product used for casts is Plaster of Paris but that, too, is not ideal due to the required drying time and the fragile nature of the completed item. There's also modeling clay but I felt the cost per package was prohibitive. While browsing through an arts and crafts store, I came upon a product made by Crayola® called Magic Modeling Clay.

This product is found in the kids' section, in the standard yellow and green packaging of Crayola®. I started off with one large package of black and tested it on a gorilla hand. For future reference, for something the size of a gorilla hand, you will need more than one large package! I chose black thinking it would hide any dirt, but depending on the animal, you may just want to wipe off the hand or foot with a damp cloth beforehand. (This works for primates and rodents, but not with birds and hoofstock.)

Now, the cooperation between departments comes into play. Since I worked in the hospital, I had ready access to animals under anesthesia. If you do not work in this department, you need to discuss the possibility of stepping in on planned procedures. Another person in the room may not be readily accepted, but once you get the procedure down, it will only take a short period of time.

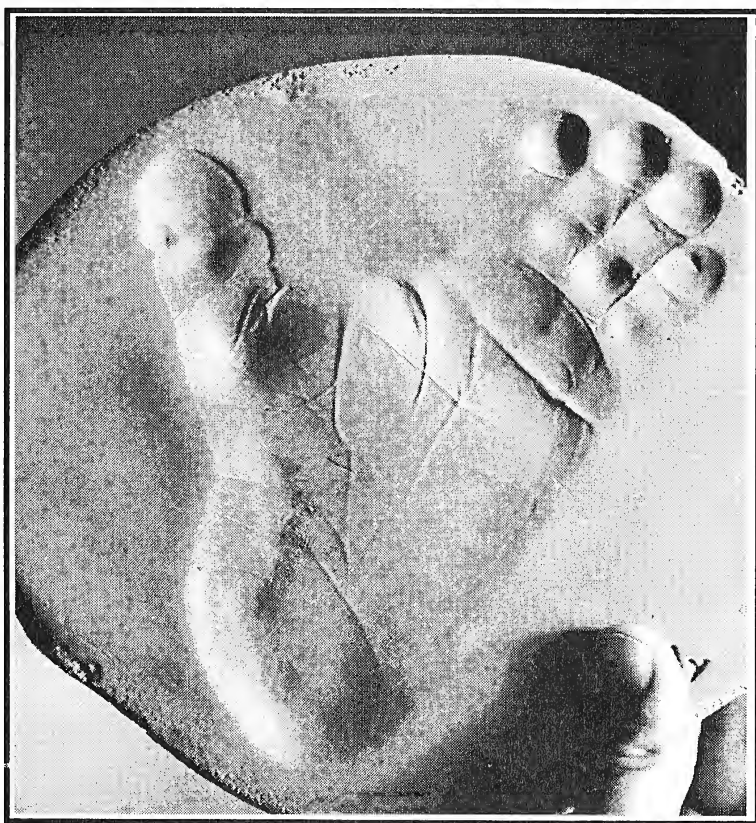
Moving on, you need to have a sturdy surface on which to place the clay so you can push the foot into the clay. Generally I found a clipboard to be the ideal size, except for that gorilla hand mentioned earlier! I also learned from experience to put a layer of plastic (a grocery bag works fine) on the clipboard to make it easier to remove the clay so it can dry thoroughly. This plastic layer needs to be secured so it does not get imbedded in the clay when pressed down. Next, you need to decide on how much clay you need. If more than one package is needed, be sure to knead the clay so it blends together without obvious creases. I found a rolling pin ideal for evening out the clay and then you can place it squarely on the clipboard covered with plastic. Don't roll the clay too thin; about 1/4" should be right, since you want to be able to make an imprint into the clay. Assuming you have permission to handle the animal at this point, choose which hand or foot (or even the tail for a prehensile animal) is most accessible. Initially you want to place the foot gently on the clay to make sure it fits; once you are sure, press firmly on all parts to get a good impression. When you are done pressing, gently peel the foot up and out of the clay; be careful of toenails that may stick. (If something is wrong with the impression, you can re-knead and re-roll the clay to try again.)

The last part is labeling the print. I used the end of a paperclip to poke in the type of animal, left or right, hand or foot. If you don't want to bother with this, you may be able to write on the back at a later point. Slip the plastic off the clipboard, turn the print over and peel the plastic off the clay. Leave the print in a safe place overnight so it can set. Make sure both sides are allowed to dry thoroughly.

The Crayola® clay comes in primary colors yellow, blue, orange, green, and red as well as black and white. There are large packages and small packages and they are also offered in a bucket of mixed colors. If you don't use all the material or something prohibits you from using it after you have already opened the package, store it in a Ziploc® bag (removing as much air as possible) and although it is a bit tougher, it is still useable. To avoid any unnecessary repetition, a list of prints already made should be kept. The finished product is soft, lightweight, durable, and easily transportable.

The footprints can be used by an education program, in a classroom, or at a docent station. Children (and adults!) can hold the animal prints and compare the size and shape to their own hands or feet. Your education department might request certain species' prints to complement their presentations and this could be the beginning of your most desirable list. Similar to the animal paintings offered by some zoos, other ideas for the prints would be to include them in adoption packets, as auction items, or even as special items in the gift shop.

In whatever way the footprints are used, they are sure to be well received. So buy some "magic clay" and have fun making a contribution to education at your zoo.



**Chimpanzee (*Pan troglodytes*) handprint  
made with Crayola® brand Magic Modeling  
Clay.**



**Hand (left) and foot (right) prints of a Pygmy Marmoset (*Callithrix pygmaea*)**

**Please Note New Email Addresses for AAZK Administrative Office/AKF**

Members are asked to note that there are new email addresses for both the AAZK Administrative Offices and for *Animal Keepers' Forum*. These changes became necessary when our cable service switched from Roadrunner to their own network.

The address for Barbara Manspeaker at AAZK Administrative Offices is:  
[aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com)

The address for Susan Chan and *Animal Keepers' Forum* is:  
[akfeditor@zk.kscoxmail.com](mailto:akfeditor@zk.kscoxmail.com)

**>>Please begin using these new addresses immediately<<**

# Legislative Update

Compiled by Georgann Johnston  
Legislative Advisor  
Sacramento, CA



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## CITES Changes in the News

Three countries have recently become signatories to CITES, an international convention designed to protect endangered flora and fauna. These countries include Lithuania, Ireland, and Yugoslavia - bringing the total number of member nations to 157. By signing the treaty, these countries agree to be bound by decisions concerning wildlife trade, conservation, and similar actions usually enacted at the biannual CITES convention of Delegates held at various locations around the world.

On another note, the United Arab Emirates (UAE), Fiji, Vietnam, and Yemen have all responded to trade measures imposed by CITES for inadequate implementation of the treaty in those countries. The CITES Standing Committee has agreed to lift or modify previously imposed trade measures in response to the UAE's pledge to reform wildlife management and trade practices. Such practices include movement of live birds of prey across UAE borders and development of a domestic registry of birds being used for noncommercial purposes.

Fiji also had its trade suspension lifted in response to its pledge to introduce CITES legislation before its main governmental authority before the end of summer 2002. Additionally, Fiji has agreed to set trade quotas for coral species at half of its 2001 exports and will not authorize further exports until this quota takes effect.

Vietnam had its trade suspension lifted following enactment of its CITES legislation in February. However, Yemen remains suspended pending the development of legislation in keeping with CITES goals and concurrent training of wildlife enforcement officers. *Source: The Traffic Report, published by World Wildlife Fund's TRAFFIC North America July 2002*

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## Fence Along California/Mexico Border Poses Threat to Native Wildlife

A House-Senate Conference Committee is working on the Homeland Security bill - a national safety measure that includes a House-passed provision to make completion of a border fence along the Mexican border in California one of its top priorities. The measure has been a topic of contention in California and across the country - not because of its goal to protect U.S. borders, but because it fails to utilize readily available, inexpensive state-of-the-art technology that would provide greatly enhanced security without needlessly endangering California's natural heritage.

Section 416 of the House-passed Homeland Security Act makes completion of an environmentally damaging 14-mile border fence a priority for the Secretary of the newly created Department of Homeland Security. The proposed triple border fence would level off mesas and use the dirt to fill in canyons, streams and wetlands in an area of unbroken wildlife habitat. The project would send tons of sediment into the fragile Tijuana Estuary, significantly altering important habitat for threatened and endangered species, including the California least tern, brown pelican, Light-footed clapper rail, Least Bell's vireo, California gnatcatcher, and also the western snowy plover. Disturbing the area's mesas, steep natural banks, and canyons would also damage the habitat of endangered plant and animal species as well as completely negate the millions of dollars already spent to preserve the area's natural habitat.

This is not a "fence vs. species" fight - there is a very simple, and believe it or not, inexpensive way to finish the fence without endangering habitat and species on the brink of extinction. By using state of the art technology, the environmental impact of this project can be minimized. An enhanced single fence with embedded sensors that follows the contours of the land would provide enhanced security without needlessly endangering California's natural heritage. *Source: Audubon Action Alert 6 September 2002, vol. 2002, No. 18.*



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## **Everglades Restoration Plan Approved by U.S. Senate**

On 5 September 2002, the U.S. Senate approved language that gives the U.S. Army Corps of Engineers (Corps) the authority to complete the Modified Waters Deliveries Project, a critical step for Everglades restoration. The vote was unanimous to include this authority in the Senate Interior Appropriations bill.

The Senate approved condemnation authority for the Corps that was lacking in the opinion of the magistrate presiding over the issue. The absence of condemnation authority has been an obstacle to restoring Florida Bay and the Everglades — major components of the Comprehensive Everglades Restoration Plan cannot be constructed until the Modified Waters Delivery Project is completed.

The language would give the Corps the authority to buy out willing sellers or condemn property in a small 8.5 square mile parcel of land that is vital to returning the flow of freshwater to Everglades and Florida Bay. This new authority will enable the Corps to finally complete the long-delayed Modified Water Delivery project. While the overwhelming majority of property owners in the area are willing to sell their land, a few property owners are not so the project has been stalled. The lack of condemnation authority has been an obstacle to restoring Florida Bay and the Everglades, as major components of the separate Comprehensive Everglades Restoration Plan can not be constructed until the Modified Waters project is completed.

While the Senate has not yet completed its work on its Interior Appropriations bill, the U.S. House has voted out their bill, which did not include this proposal. That means a final determination on this matter will be made by a House-Senate Conference Committee in the fall of 2002. *Source: Audubon Action Alert 6 September 2002, vol. 2002, No. 18.*

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## **Minister for Animals in India Loses Job**

Maneka Gandhi, the first Minister for Animal Welfare in the cabinet of any nation has been ousted from her job of four years by India's Parliament. Gandhi has taken the position that her job was terminated because she is an outspoken advocate of animal rights and that her views differ with the head of the Congress Party (similar to our House of Representatives).

Gandhi was responsible for instigating a funding program for animal birth control to help Indian cities meet the 1997 goal of achieving no-kill control of street dogs by 2005. Additionally, she promoted enforcement of long-neglected animal welfare laws and was a founder of the National Institute of Animal Welfare - an eight-acre site just outside Delhi.

Gandhi has been a long-time activist opposing the use of animals in experimentation. In particular, over her four years in office she targeted researchers using primates to unlock the secrets of the AIDS virus. Gandhi has stated that she will continue to work for the animals of India - both captive and in the wild - even without the power of a Cabinet level position to back her up. *Source: Animal People News Sept. 2002 vol. XI, No. 7*

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## **Brown Bears Protected in Bulgaria**

The Parliament of Bulgaria has declared brown bears to be a protected species that may no longer be hunted, bought, sold or displayed to a paying audience. About 800 bears inhabit the Bulgarian mountains, 30 bears are in zoos and another 21 bears are with gypsy exhibitions of "dancing bears". An additional 11 bears are in breeding colonies used to support both the zoo and circus trade. *Source: Animal People News Sept. 2002 vol. XI, No. 7*

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## **Saving Great Apes Saves People Study Shows**

A study by the UN Environment Program warns that "less than 10%" of the habitat crucial to the survival of Africa's great apes "will be left undisturbed by 2030 if road building, mining camps and other infrastructure developments continue at current levels" says Environmental News Service. Unfortunately, the prospects for Southeast Asia's orangutans is even bleaker with the scientific report predicting that "in 28 years there will be almost no habitat left that can be considered relatively undisturbed." The Great Apes Survival Project contends that conserving the great apes' remaining habitat is essential to the welfare of the "many people that rely on forests for food, medicine and clean water. *Source: GreenLines Issue #1697 9-4-02*



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## Earth Summit Deal Seeks Extinction Reducation

Nearly 200 nations at the Earth Summit have agreed to a U.N. plan that among other things would “slow the rate at which rare species of plants and animals are being wiped out” reports Reuters. With many leading scientists predicting that “up to 50% of the world’s species could be wiped out by human activity in this century,” the plan calls for a “significant reduction” in the current extinction rate and recognizes that “poor countries would need extra financial and technical help to achieve the goal.” Greenpeace criticized the “watered down target” that only slows the rate extinction and backtracks from an agreement in April to “stop the rate of species loss, although with no deadline.”

Source: GREENlines #1699 9/6/02

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## Poaching Pushes Rhinos to Brink

Asian rhinos are being pushed to the brink of extinction by a “new wave of poaching” that has killed nearly 100 of the fewer than 3,000 rhinos left in their one-time extensive range, from Pakistan across northern India and down through Southeast Asia into Vietnam and Indonesia reports the BBC News. Combined with habitat loss due to logging and farming, the three Asian rhino species are “under relentless pressure” with the Vietnamese population of Javan rhinos no down to “fewer than eight animals. Sixty other Javan rhinos are found in Indonesia which along with Malaysia has the 300 remaining Sumatran rhinos. The only “terrific conservation success story” is Nepal and India, where the greater one-horned rhino has recovered to about 2,400 animals from “only twelve animals a hundred years ago.”

“There is no room for complacency in our battle to save this species,” said specialist Elizabeth Kemf in a new WWF (World Wide Fund for Nature) report titled “Wanted Alive: Asian Rhinos in the Wild.”

“The Asian rhino will only be saved from extinction if we can reduce the pervasive ongoing demand for traditional Asian medicine and restore its shrinking and fragmented habitat,” she wrote.

The WWF said the African rhino, a two-horned variety, which unlike the Asian forest-and-mountain dwelling variety lives mainly on savannah land, now totaled around 11,000 out of tens of thousands more at the start of the last century.

Most endangered was the northern white rhino, which lives largely in conflict zones in the eastern Democratic Republic of Congo, although there were nearly 8,500 of its cousin, the southern white rhino, in a range from Kenya to South Africa. The slightly darker black rhino, which shares a similar range, totals around 2,600. Source: GREENlines Issue #1688 8/21/02

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## Nigeria Endangered Species Bazaar

Nigeria has become “one the world’s most flagrant illegal markets for Africa’s primates and other threatened species” where “emaciated” baby chimpanzee can be purchased for about \$500 and even gorillas “can be ordered for the right price” reports the *L.A. Times*. In markets around the capital “affluent customers” can choose from “some of the world’s most threatened species,” like fish eagles, gray parrots, desert foxes and cranes. Although much of Nigeria’s rare wildlife is gone, commercial trapping in neighboring countries provides the rare species for the lucrative trade to private collectors and zoos mainly in Asia, eastern Europe and the Middle East. Source: GREENlines Issue # 1675 8-2-02

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## Pronghorn Faces Imminent Extinction

Interior Secretary Gale Norton has “callously ignored a court order” to “take clear steps” to protect Arizona’s Sonoran pronghorn, which is facing “imminent extinction” due to a severe drought, continued grazing and military activities on its public lands habitat says Defenders of Wildlife. Trapped on fragmented habitat and “hard hit by the recent drought,” only 50-80 individual pronghorn remain, down from “as many as 250” a few years ago. “Almost all of this year’s fawns have died,” as have four out of the six adults that had been fitted with radio collars. In a February 2001 landmark ruling, a federal judge responded to a Defenders lawsuit by “requiring Norton to analyze the cumulative impacts” of federal activities and curtail any that were harmful. Source: GREENlines Issue #1678 8-7-02

## Cambodia Moves To Protect Endangered Species

One million acres of pristine wilderness has been set aside by the Cambodian government for protection as a sanctuary for such species as the Indochinese tiger, Asian elephant and Malaysian sun bear. With the financial and conservation support of six U.S. and international organizations, the declaration created the Central Cardamoms Protected Forest in southwestern Cambodia's Central Cardamom Mountains. Two wildlife sanctuaries border the newly designated sanctuary, bringing the total land area under protection to 2.44 million acres (990,000 hectares). Mt. Samkos Wildlife Sanctuary comprised of 825,000 acres (334,000 hectares) lies west of the Central Cardamom Mountains; and Mt. Aural Wildlife Sanctuary (627,000 acres/254,000 hectares) lies to the west. The combination of these as protected areas equates to the largest, most unspoiled wilderness area in Southeast Asia.

Also protected within this area are such threatened species as the pileated gibbon and the critically endangered Siamese crocodile, which has its only known breeding population in the Cardamoms. But trade in endangered wildlife takes place on the streets of the country's capital, Phnom Penh, where the skins and body parts of bears, tigers, elephants, crocodiles and other animals are for sale. These items are smuggled to neighboring countries for use in traditional medicine.

To control this illegal trade, Cambodian rangers, military police and community monitors are patrolling and enforcing forest and wildlife laws within the newly protected area. (Source: *Environmental News Service (ENS)*)

## Zoo Keeper Kenya Safari 2003

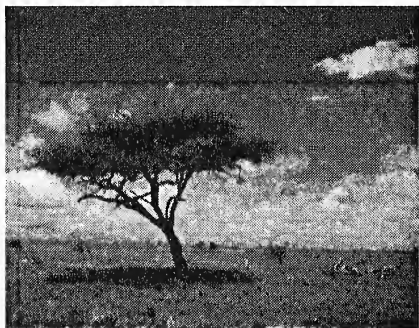
This is the African Safari you have been waiting to take! You'll spend 10 days right in the middle of the Lewa Wildlife Conservancy. The luxury tented camp looks over a ridge where you wake to watch elephants and giraffe browsing while you have your morning coffee. The game drives let you come within feet of hundreds of species of wildlife including black rhino in their native habitat! And the food is outstanding! Well don't just sit there. Let's go!! Because of your support of Lewa Wildlife Conservancy through Bowling, For Rhinos AAZK members have earned special discounts at Lewa Safari Camp (almost 50%!).

These trips are run with the Zoo Keeper in mind, so the wildlife viewing is more in-depth. And the best part is that the proceeds go directly into conservation. Here are the details of the trip.



Dates: May 28 to June 8, 2003

Cost: approx. \$3,100 US (includes round trip airfare, accommodations, food, driver and Land Rover) plus tips (approx. \$50 per person)



Extras (all at reasonable prices): Side trips to other Kenyan parks (Samburu, Meru, Jane Goodall's Sweetwaters, etc.), overnights at award-winning Masai lodges, horse or camel-back wildlife rides, shopping at local market, drinks (Tusker Beer® is tasty!).

We will only be taking 12 people to make sure everyone has a great time. These trips are becoming very popular, so book early. For more info or to reserve your space call Kevin at 813-968-3764 or visit my website at <http://web.tampabay.rr.com/zookeeper/>. The best part is that I coordinate the details so all you have to do is get on the plane and enjoy!

# Training Sun Bears (*Helarctos malayanus*) For Pole-Injection Through Operant Conditioning

By

Carrie Weitz, Animal Keeper

Lincoln Park Zoo, Chicago, IL 60614

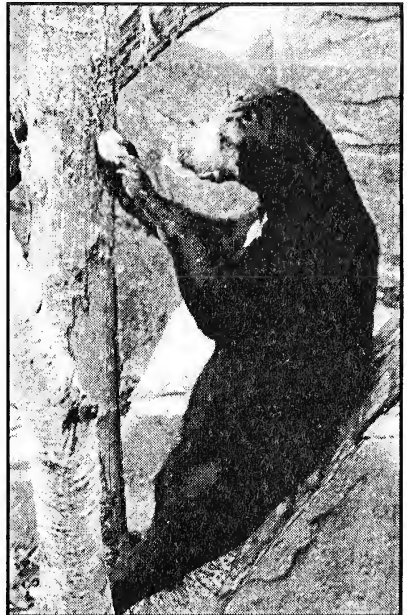
Meg Hudson-Dye, Animal Management Resources, Inc.

On 28 November 2001, a stressful procedure was eliminated from the Lincoln Park Zoo bearline. For years, tranquilizer darts have been utilized to chemically restrain bears for physical exams and veterinary procedures. The dart was usually shot from a small viewing slot approximately 4-6 ft. (1.2-1.8m) away from the animal. The bears could sense when they were about to be darted due to additional equipment and staff anxiety on the bearline. They appeared apprehensive of the gun and the veterinarians. This made it difficult for the vets to routinely check the bears because the animals were always suspicious of being darted. For these procedures, the bears were locked in a hallway between two dens. The bears would immediately begin to pace, which would make it difficult for the veterinarians to get a good shot. This created a situation with the potential of shooting a bear in the face, neck, or abdomen. However, through the use of a consistent operant conditioning schedule, and added training space, it is no longer necessary to use the dart gun for immobilizations.

Lincoln Park Zoo currently houses 1.1 sun bears (*Helarctos malayanus*) at the bearline exhibit. This pair has been together since November 2000. Although they are very compatible, no breeding has been observed. The male, Fong, is genetically valuable to the Sunbear Species Survival Plan, as he is one of only four males in the captive population. In February 2001, the female, Bandau, was diagnosed with squamous cell carcinoma. A tumor was found under her tongue, requiring surgeons to remove the lower portion of her jaw. She underwent intensive radiation and chemotherapy weekly for six weeks. Since this procedure, all subsequent physical exams have shown no signs of the cancer returning. The treatment she received may have saved her life, but being darted every week was very stressful for her and everyone involved.

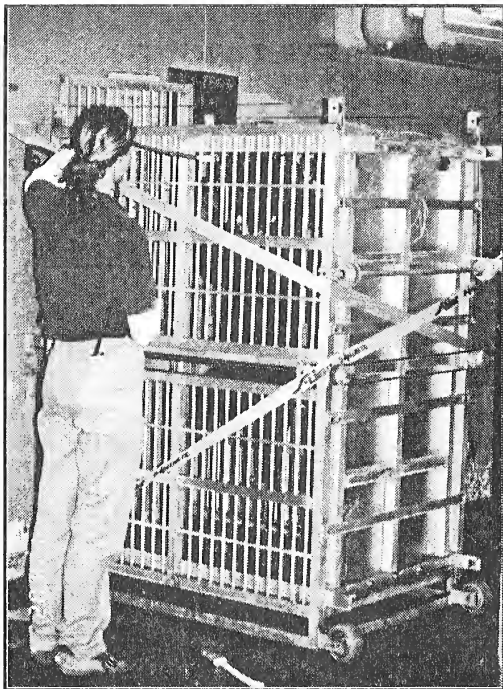
Previously all training had to be done through a 4-inch by 4-inch (10.2cm x 10.2cm) barred window. The only behaviors successfully conditioned were open mouth presentation and minimal targeting. Although the window allowed us to find the tumor in Bandau's mouth, it proved ineffective for immobilization procedures. In order to expand the training program, better access to the bears was needed, both physically and visually. With no immediate plans to renovate the area for training, it was necessary to find a cage or crate that would attach to the bear dens. A squeeze cage, which had previously been used for gorillas, was found in the bearline basement. After hauling it up, oiling it, and cleaning it out, it turned out to have great potential.

On the bearline, there are two separate sunbear dens with a hallway between them. During training, the cage is attached to the door of this hallway. The cage is 5 ft. long, by 3 ft. wide, by 6 ft. high (1.5m x 0.9m x 1.8m).



0.1 Sun Bear "Fong" at Lincoln Park Zoo

To connect the squeeze to the den, it is first positioned as close to the door as possible. The back end of the squeeze is on wheels to facilitate this process, but it is still a two-person job. Two eyebolts are attached to the wall above the hallway door, one on each side, and two are attached to the floor, one on each side. Next the cage is secured to the wall with two straps attached to the eyebolts. One goes from the eyebolt at the top right to the floor eyebolt on the left. The second crosses from top left to bottom right. The straps are cranked tightly to avoid any movement of the cage while the bears are inside. When set up, there is a six-inch (15.2cm) gap between the door and the cage that could create a potentially dangerous situation where a bear could reach out. Therefore, the bears are only given access to the cage with a keeper present. It is also mandatory that bears not be trained near this gap. A modification was also made to the cage to allow a keeper to reach in if necessary. One of the small bars was taken out to create a small hole through which a hand could fit. A removable bar was added to close the hole when it is not in use.



Cage which is attached to door in hallway behind bearline during operant conditioning sessions.

With the addition of the squeeze cage, the priority-training goal became conditioning the bears to a pole-syringe injection for their upcoming physicals. This would eliminate the dart gun from the procedure, and greatly reduce stress during knockdowns (for the animals, keepers, and veterinary staff). A new training schedule and shaping plan were established. The training process began by desensitizing the bears to the squeeze cage. Ideally, the bears would have been given access to the squeeze cage overnight in order to increase their comfort level in the area. However, this was not possible due to the safety issue involving the large gap. Fortunately, the bears acclimated to the squeeze cage almost immediately.

The initial focus was on the male, Fong, because his physical was scheduled first. He was comfortable coming in the squeeze right away. He was fed the majority of his meals in the squeeze, as well as a dilute honey and water mixture from the keeper. On the day of his physical he would be fasted, and only allowed to have a very small portion of a dilute honey liquid. Therefore, it was important to only train Fong with this honey mixture as reinforcement, rather than using fruit, chow, or any other food items.

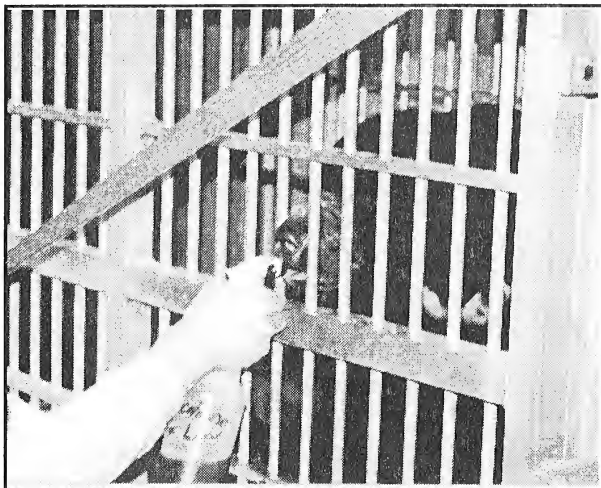
The shaping plan included reconstructing all steps that would occur the day of his exam. Fong had been trained to touch his nose to a target stick in the past, which provided an easy way to move him into position. For pole injecting, the bear needs to be sitting relatively still with an area of muscle exposed. Positioning Fong was very simple since he would always immediately come over to the keeper for his honey. A sit behavior was put under stimulus control to provide a consistent position for the pole injection. Fong would usually sit within the first two minutes of coming into the squeeze. To train the sit behavior, the keeper would wait for him to sit before reinforcing him, thus capturing a behavior that he did naturally.

The next step was to introduce a second keeper, who would eventually administer the injection. Two keepers trained Fong at least once a day. Initially, while Fong was at station, the second keeper

just walked around the squeeze to let him know that someone was back there. Fong was also desensitized to the doors of the dens closing, thus limiting his access to the squeeze cage and the hallway. It was decided not to lock the bear in the squeeze cage so that he would have a safe place to go into when injected. Since the drug Telazol® stings as it enters the body, Fong had the option of moving away from the injection site into the hallway. The reason he was denied access to the dens was because they have benches. If he climbed on them after being injected, he could potentially fall off and injure himself.

The next step of the training plan was getting Fong accustomed to being locked inside the dens and fasted at night. Normally the bears have access to their yard at night, however, for physicals they must be locked inside without access to food or water. To do this only the night before a physical would alert the animal to the fact that something unusual would soon occur, thus causing stress. This phase of training also proceeded quickly since no behavioral changes were observed. Further along in training, Fong was desensitized to seeing a video camera set up on a tripod behind the squeeze cage.

Filming the exam, and some of the training sessions, would prove to be very beneficial for both trainer review and training documentation. Fong never had any reaction to the camera.



Fong received diluted honey water as a reward for holding his position while in the training cage.

As the training progressed, the second keeper would walk behind Fong holding the actual pole-dart that would be used to inject him. From the beginning, the pole had a syringe attached to it. The pole would be tapped on the ground so he could hear it, and know something was in the keeper's hand. Eventually the keeper was able to crouch down behind Fong with the pole. The flat end of the pole was used to tap Fong on his hip to begin simulating the actual injection. The first time he was tapped, there was no reaction. He didn't even turn around to look at the keeper behind him. After this reaction, it was decided to move on to the blunt needle on the other end of the pole. The first time the needle was used, he turned around to look but did not move. Subsequent times he did not even look.

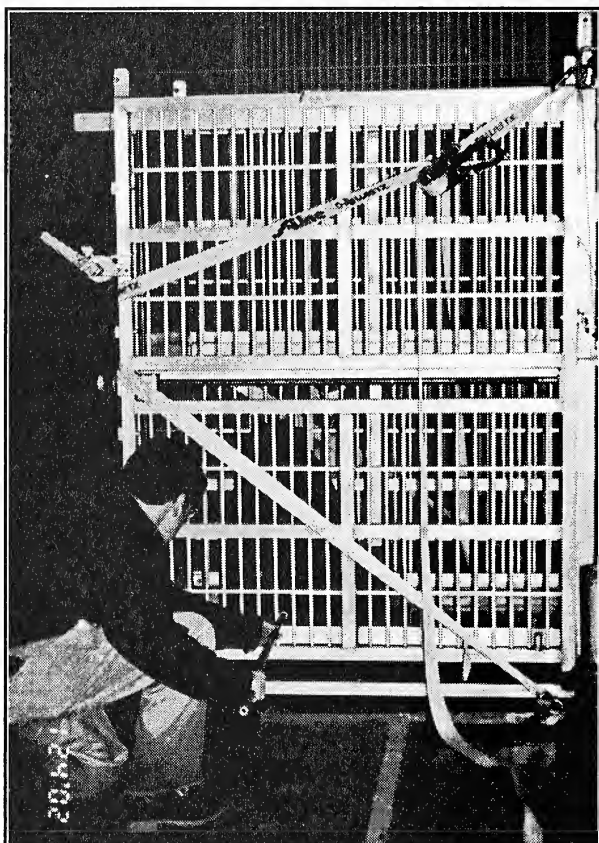
The final step in the training process was to have the drug Telazol® present in combination with all of the other steps. A small amount contained in a syringe was used that he could smell immediately upon entering the squeeze cage. He backed away from it, but did not leave the area. Fong's obvious reaction to the smell was very interesting, since the keepers could not smell the drug at a much closer distance. The decision was made to have the drug present at every training session to desensitize him to the smell. Having Telazol® present turned out to be the most important step in the whole training process for Fong.

The entire training process for Fong took six weeks. Keepers were able to move along very quickly to combine all necessary steps. The final result was a successful Telazol® injection with the pole-syringe. Something Fong could not be prepared for was the sting of the drug as it enters the body. Initially he jumped and backed out of the squeeze, but he came right back in for a reinforcement. Unfortunately, the dose was inadequate, and the drug did not immobilize him. He was called back in

and injected with a second dose with no problem. The following day he came right back into the squeeze for a mock injection and many reinforcements. This behavior is now trained 2-3 times per week in order to maintain a positive reinforcement ratio.

Desensitizing our female to pole injection was a little more difficult due to the number of times she had been darted during her illness. However, it went better than expected, and she was pole injected as well. The same shaping plan was followed to train Bandau for the procedure. Similar to Fong, Bandau allowed the injection to happen without restraint or darting. The training area is also used to train spectacled bears (*Tremarctos ornatus*). One spectacled bear has been successfully pole injected,

and the other bear is the next priority.



Desensitizing LPZ Sun Bear to pole syringe during an operant conditioning training session.

Operant conditioning in a squeeze cage has eliminated a stressful situation for bears, keepers, and veterinary staff. The process of hooking a cage up to the den doors is very simple and could probably be done at any institution. With better visual access to the bears, there are many more options for future training. Crate training the bears for shipment will be a lot easier once they are conditioned to being closed into a cage in the hallway. The squeeze modification will also allow keepers to train for vaginal swabbing, ultrasound desensitization, and possible semen collection. Collecting a vaginal swab will be very helpful in determining Bandau's estrous cycle, as well as pregnancy. Collecting semen from Fong will be very beneficial to the Sunbear Species Survival Plan, due to his genetic value. Thus, the use of operant conditioning in a squeeze cage has allowed the training program to greatly expand, and to accomplish tasks that would have been impossible in the past.

### Acknowledgements

I would like to acknowledge the following for their hard work and assistance. Cathy Maurer was very dedicated to our training sessions, and was able to administer the injection to each bear. Matt McDonald, from Johnson Controls, provided the hardware for setting up the cage, and contributed significantly to all modifications made. The veterinary staff had great confidence in allowing animal keepers to inject the bears, and provided the equipment. Thank you to Lincoln Park Zoo for supporting our training goals for this project, as well as future endeavors.

*Photos provided by the author.*



## Why Exotic Cats Don't Make Good Pets!

*By Louis Dorfman, Animal Behaviorist  
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"Wild animals don't make good pets." How often have we heard that phrase used? It's so common that it falls into the same category as "smoking is bad for you," or "you must get eight hours of sleep." In other words, people who hear the phrase discount it as being too generalized or not applying to them. *It may be right for a lot of people, but I'm different.* Seem familiar? Well, there is validity to the proposition, but rarely does anyone bother to try to explain why. The prevailing attitude is that the statement is supposed to just be accepted as true by people in the animal field who say it. In the following article, I'll try to explain why wild animals really don't make good, as it applies to exotic cats.

First, let's define "pet". Different people have different versions of what a pet means to them. So, let's go to the dictionary. "Pet" is defined as "an animal that is **domesticated** and is kept as a **companion**" (Emphasis added.) Now let's define "domesticated". It is defined as "to **tame** for human use." Okay, with that out of the way, let's see how it applies to exotic cats.

An exotic cat is an evolutionary marvel of reactions and instincts, together with a strong will. They can never be tamed in the sense we normally associate with that word. They are strongly affected by any source of stimulation, and it affects their mood and reactions. The degree of their reactions to any stimulus is also much greater than the response we would consider appropriate by our standards. These factors are crucial to understanding what must be known in order to safely be in contact with these beings on a regular basis. If one attempts to control the cat's actions, and the cat considers you a source of agitation at a time when it is already excited, nervous, or already agitated, the cat may well attack or strike out at you. The fact that you raised it will not matter. Sound like it can be domesticated?

There are times when any cat, no matter how much it likes you, will impulsively strike at you if you do the wrong thing at the wrong time. They don't turn on you, as conventional thinking dictates, but they will strike at a perceived source of irritation or agitation when in a certain state of mind. Perhaps one hour later, one could have done exactly the same thing that caused the strike with complete safety. One's safety lies in rehearsing positive encounters and mutually satisfying interactions, and avoiding or minimizing any negative or irritating encounters. Now that alone is often not enough. For instance, when a female comes in heat, she may become vicious towards any human (including you), even if she is normally the most docile of exotic cats. I have personally seen this happen. Sound like the kind of companion you want?

Now what must one do if they hope to have any sort of relationship with an exotic cat? For one thing, it is extremely important that one is totally tuned in to a cat when in its proximity. One's safety and the quality of one's relationship depends on accurately reading the cat's eyes, how it walks, the speed of its movements, its sounds, the movement of its tail, the position of its head. How it approaches you, and how the cat responds to one's presence at that moment. Remember that these cats have all the emotions we have, but they don't have any inhibitions. What they feel like doing is what they'll do. If one misreads any element of their subtle signals (including those signals too subtle to be easily stated), the cat will ultimately become uncomfortable and will not want contact with you. Sound like your definition of a pet? Or a companion?

Also, be aware that children are always in peril since the instincts of an exotic cat are always to lock on and stalk the smaller of any species. And with the added element of jerky and sudden movements often associated with children, any contact between the two is a recipe for disaster, as many recent anecdotes attest. There have been several children killed by exotic cats recently here in Texas alone.

But one might ask with some accuracy - "Haven't I seen many cases of very affectionate interactions between trainers or behaviorists and exotic cats, including on the website of the International Exotic Feline Sanctuary?". The answer is "yes", with a great many caveats. First, the affectionate and loving interaction witnessed is not easily attained. It is the result of a long period of positive interaction between a trained and quite knowledgeable professional, with many days of positive reinforcement. One can do things right for 100 days and, if one then creates tension or agitation for only a couple of days in a row, the bond might well be seriously breached. Also, this author has met and known most of the contemporary recognized experts and even individuals considered legends in handling exotic cats. They'll bear a number of scars (including this author) attesting to the fact that experience does not come without consequences. Is this what one would expect or want from a pet?

In reality the exotic cats bear no relationship to what is commonly called a pet. I would define a pet as an animal that can be taught to reasonably adapt itself to the domestic life of a human and be safely considered part of the human's household and environment. In the very best of circumstances, the relationship with an exotic cat can be similar to that one might have with a goof friend, where many compromises are made and both parties have to adapt to each other's habits and personalities. However, unlike the relationship between good friends, there is always the potential for the cat to strike out and harm even a human with which it has a very affectionate and close bond. One of the most common mistakes made by humans interacting with exotic cats is to impose themselves on the cat. One must always let the cat become comfortable with your presence and let the cat dictate how much tactile interaction it wants at that moment or that day. Is that normally the concept one would entertain about how they would want to cohabit with what they would call a pet? For the great majority of people, I would think the answer would be "NO!"

Now to the more mundane—but vitally important—areas of housing and feeding. At the International Exotic Feline Sanctuary we feel that big exotic cats, such as lions and tigers, should have a minimum of 4,500 sq. ft. of living space to give them the quality of life to which they are entitled. Tigers and jaguars also require a pool for swimming and cooling. We find that building an appropriate habitat for such a cat costs around \$30,000. This is actual cost. We have our own welder on staff and employees to do the work, so this doesn't include any contractor's fees or other expenses. In addition, a cat this size eats around 11lbs. of meat a day, which also must be supplemented with a variety of vitamins and minerals to give them the balanced diet required for their system.

So while looking at that cute little cub one might see on a television show or at a zoo, before thinking, "Gee, I'd like to own something like that," think long and hard. They stay a cub for a very short time. Then all the problems enumerated above—plus a large number I didn't include here—come into play. If one really has a deep and abiding interest in learning about big cats and developing a relationship with one, my suggestion is to volunteer at a facility like ours. I sincerely believe one will find much more satisfaction being part of something that directly improves the lives of worthy exotic cats rather than creating another problem that has to be solved by some sanctuary. Our volunteers are dedicated and committed, and they know they have a vital part in the improvement of our resident cats' quality of life. Many of them have been assisting us for many years. They feel fulfilled, and the cats' lives are better for their presence.

*(Editor's note: The Viewpoint Column offers readers an opportunity to their express opinions on topics related to the profession of animal keeping. It is not a forum for expressing disagreements with employers about labor-related issues. Opinions expressed in this column do not necessarily reflect those of AAZK, Inc. or Animal Keepers' Forum. Publication of opinions in this column does not constitute endorsement by AAZK, Inc. or Animal Keepers' Forum. Materials submitted are published at the discretion of the editor.)*



# Effects of Facility Modifications on Elephant Activity Levels

By

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And

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## Abstract

Wild elephants live in complex social groups and travel long distances in search of food and water. Since these conditions cannot be duplicated in captivity, it can lead to hours of inactivity and boredom. As keepers, part of our job is to enrich our elephants' lives both mentally and physically. For us, this has been especially challenging with the switch from a free contact elephant management system to a protected contact system, which is still in the process of expanding. After a recent renovation to the exhibit, a study was conducted to assess the impact of the changes on elephant behavior. Initial results show that facility modifications can affect behavior. Unwanted behaviors can be decreased if enrichment is provided to fill inactive periods.

## Background

Reid Park Zoo (RPZ) houses 0.1 Asian elephant (*Elephas maximus*) "Connie" and 0.1 African elephant (*Loxodonta africana*) "Shaba." They have shared the same exhibit since April 1982. The elephants were managed in a free contact system until January 1994 when an Elephant Restraint Device (ERD) was installed and RPZ's protected contact era began. The only keeper/elephant contact areas were the ERD and two small openings in the exhibit barrier for keepers to carry hay through to the exhibit yard. The yard essentially became a no contact area.

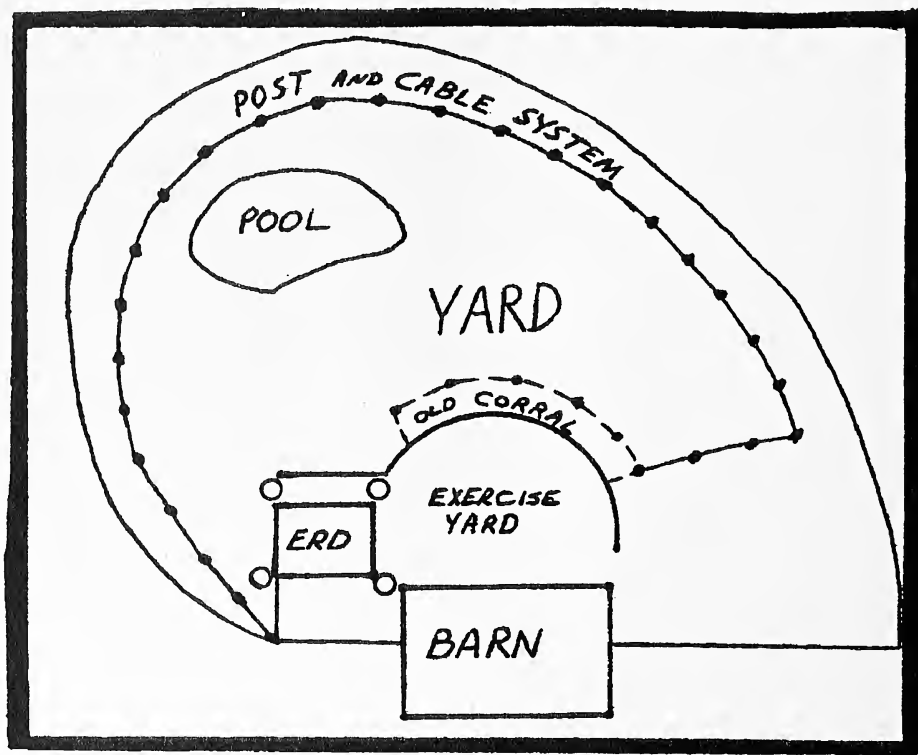


Shaba (l) and Connie (r) share an enrichment log, a treat they missed for almost eight years before the exhibit renovation at Reid Park Zoo in Tucson. (Photo by Peter Hnath)

Due to the necessity of hot wire encircling the perimeter of the yard, enrichment was very limited. The elephants would use anything larger than bite-sized treats to short out the wire and reach guardrail vegetation. The lack of challenging enrichment led to an un-stimulating environment. Historically, when faced with periods of inactivity, Connie would lapse into stereotypic head weaving while Shaba either rested or aimlessly investigated the barren exhibit. Such activities were not good for the elephants' psychological well-being or for the public's perception of elephant care in captivity.

According to Dr. Murray Fowler, the main problem for captive elephants involves foot care, and he lists lack of exercise as a predisposing factor to foot problems (2001). In both the free and protected contact systems, the elephants exhibited foot pathology. Shaba has had nail cracks on rear feet, while Connie's history of nail abscesses is abundant in both programs. However, less active elephants require more foot grooming, which results in less keeper time for other training. Roocroft and Oosterhuis also suggest exercise as an important part of elephant husbandry as it increases blood flow to the feet and strengthens them (2001).

Almost two years after the switch to protected contact, a pole corral was built at the rear of the exhibit to allow for increased keeper/elephant interaction. The corral measured 21 meters long (69 ft.) and it gave keepers access to 18% of the total yard perimeter. The majority of the yard was still a no contact area. This system remained in place until November 2001 when a post and cable corral was built to make the remaining 82% of the yard perimeter a protected contact area. Keepers now have access to the perimeter of the entire yard for the first time in nearly eight years. In addition, enrichment can now include large browse items such as palm logs and mesquite trees.



Drawing above shows expanded elephant exhibit at the Reid Park Zoo in Tucson, AZ.

This study shows how behaviors can be changed with yard modifications designed to increase enrichment opportunities and keeper access. Replacing the hot wire with a post and cable system may decrease unwanted behaviors such as resting and weaving.



**The stronger barrier now allows for log furniture in the yard. (Photo by Peter Hnath)**

### **Materials and Methods**

Elephant activity in the pre- post and cable protected contact system will be compared to the modified protected contact system. Before the study began, observations were taken in order to group behaviors into related categories for statistical analysis. Eight categories were defined to describe all activities: keeper/elephant interaction, feeding, enrichment-use, yard investigation, dusting/mud making, resting, weaving, and other (drinking, scratching, etc.).

Due to keeper time constraints, it was decided that only three days of observations would be used for each system within two consecutive weeks. In order to maintain some consistency in daily routines, both systems were observed on Sunday, Monday, and Tuesday. Observations were taken from public viewing areas to prevent elephant interactions with the observer. Since there are only two elephants, data for both were taken simultaneously. Data was recorded on daily observation sheets along with any information that could possibly affect the results. This included weather conditions, air temperatures, number of keepers working that day, and any changes in the daily routine.

Behaviors were observed from the time the elephants were brought out of the barn until the time they went in for the night, so that 100% of their time on exhibit was evaluated. Observations were taken in five-minute intervals and assigned one of the eight categories. If a behavior did not take up the entire five minutes, then the predominant behavior was listed. If two behaviors were equally represented in an interval, then both were noted and assigned two and a half minutes each. Data was tabulated and graphed to compare activity results for both systems.

The actual study took place in March 2001, four months after the installation of the post and cable structure; therefore, adjustments were made to the yard and management system to replicate the conditions of the old yard. All logs and large yard toys were removed, and browse was cut into small pieces. Since most of the yard was not accessible, only one area was used as a feeding station. Likewise, keeper/elephant interactions were restricted to the ERD and the original 21m (69 ft.) long pole corral. The only thing that could not change was the existence of the post and cable around the perimeter of the yard. Since this replaced the hot wire as a perimeter barrier, it was assumed that its presence would not adversely affect the data.

**Results**

Elephant behavior after the exhibit renovation differed from behavior before the renovation. Most notably, enrichment-use increased 250% for Shaba and 220% for Connie. Connie's resting decreased 82%, and her weaving decreased 27%. Shaba did not weave in either condition, however, her resting time decreased 46% and her tendency to wander around the yard (yard investigation) decreased 68%. (See Figures 1 and 2.)

- The following is a legend for the graphs:
- K/E - keeper/elephant interaction (training sessions, husbandry, exercise)
  - F - feeding (hay)
  - En - enrichment-use (browse, toys, frozen treats)
  - Y - yard investigation (walking, contact with barriers and yard furniture)
  - D/M - dusting/ mud making
  - O - other (drinking, scratching, elephant/elephant interactions, etc.)
  - R - resting
  - V - weaving

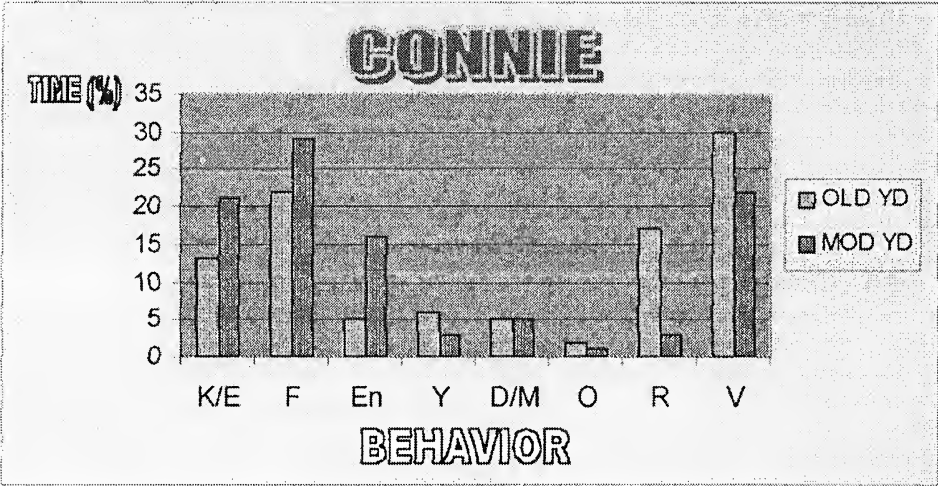


Figure 1. Comparison of Connie's behavior in the old protected contact system versus behavior in the modified system.

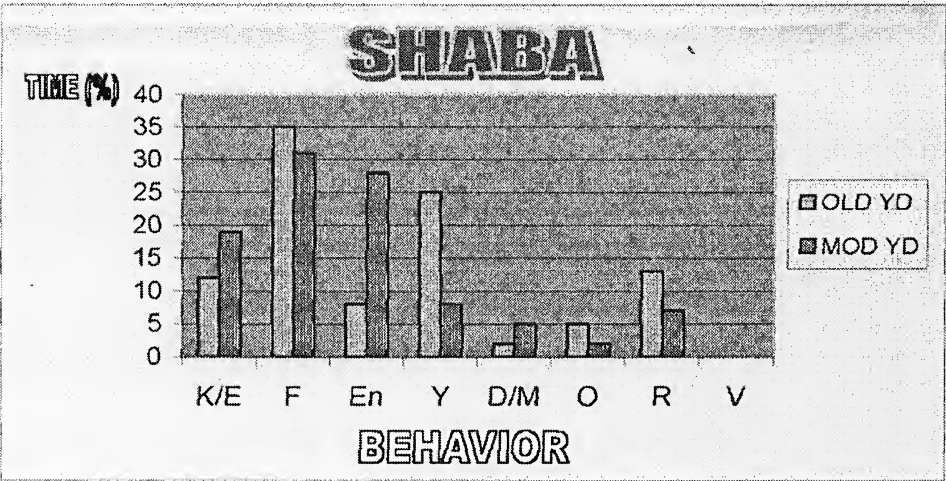


Figure 2. Comparison of Shaba's behavior in the old protected contact system versus behavior in the modified system.

## Discussion

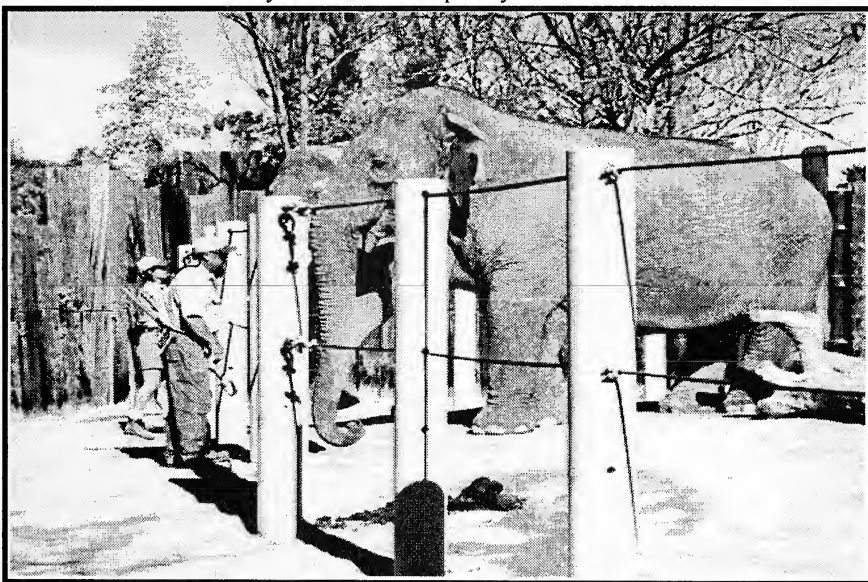
Results of the study show that elephant behavior was affected by changes to the yard. The stronger barrier made it possible to give larger, more time-consuming enrichment items such as whole logs and large branches. Rather than spending 30 minutes at a time resting, elephants used that time breaking up palm logs. The increase in enrichment-use for both elephants was the largest change (over 200%). Increasing activity with browse is especially significant for a species that spends the majority of the day foraging and eating.

As a result of more environmental choices, there was a decrease in less desirable behaviors. In the past, both elephants spent a considerable portion of exhibit time resting. Since the animals only spend an average of six hours a day on exhibit, increasing their activity during this time was a tremendous issue. In the old system, the lack of stimulation seemed to cause Shaba to wander the yard. Increasing enrichment-use gave her a more positive outlet to expend her energy.

Likewise, Connie's undesirable behavior of stereotypic weaving decreased in the modified yard. However, the 27% decrease in weaving was one of the smallest changes in behavior. This coincides with the knowledge that stereotypic behaviors are difficult to extinguish. Although weaving occurred at various times of the day, observations made during the study uncovered Connie's pattern of weaving in anticipation of feeding and training times. The reduction of this undesirable behavior, however slight, was seen as a good result and a positive step for the program.

Other aspects of elephant husbandry have also been affected. Increasing activity through enrichment is not only beneficial for psychological well-being, but also has a positive affect on foot care. With an increase in activity, nails and pads are being worn naturally and require less grooming by keepers. Decreasing resting time also means increasing blood flow to the feet. The irregular motion of weaving subjects toes to too much pressure, which can cause abscesses (Roocroft and Oosterhuis, 2001). Reducing Connie's weaving was significant because she has toe abscesses.

Perhaps the greatest potential of the yard modification is the keepers' ability to walk the perimeter of the yard, enabling them to exercise the elephants. Previously, keepers had to walk around the exhibit from the public walkway with all its distractions. The closer proximity gives the animals more incentive to participate and increases the quality of the sessions. Exercising the elephants in this manner increases their activity level and subsequently affects foot care.



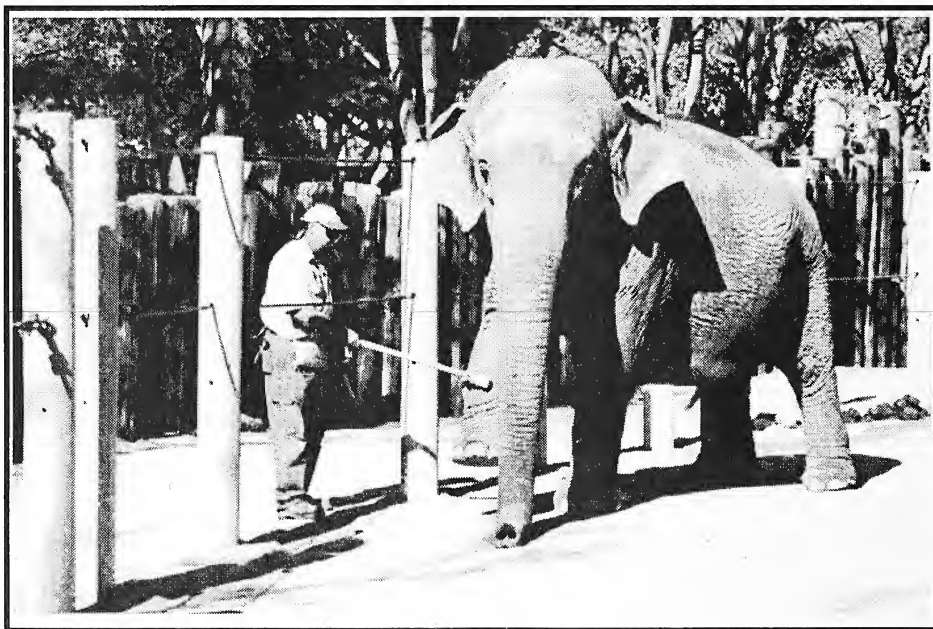
Keepers train the elephants from behind the new post and cable. (Photo by Peter Hnath)

In addition to benefiting the elephants' lives, the modified yard may affect the guest experience at the zoo. Rather than viewing elephants sleep excessively or weave, people are now more likely to see them engage in natural behaviors. Since public perception of animal behavior relates to their zoo experience, it is important to reduce undesirable behaviors that lead the guest to conclude the animal is bored or insane (as in the case of weaving).

Although results were positive, they could have been affected by problems in the experimental design. Initially, one person was to observe the old yard only while the second person observed the modified yard. Due to time constraints, it was necessary for observers to see both systems, which could have introduced some bias. Also, each system was observed for three days only, rather than a full week as originally designed. However, the conditions between the old and modified yards were considered distinct enough to nullify small sampling error.

Furthermore, the study was not conducted until after the post and cable system was installed. Conditions of the old yard (less enrichment and keeper space) had to be replicated along with making the assumption that doing so would render the barrier type insignificant. In hindsight, observations of the old yard should have been taken prior to the renovation for a more accurate comparison.

Another unforeseen factor was the weather. Daytime high temperatures averaged 66°F (18.89°C) in the old yard observational period and 80°F (26.67°C) in the modified yard observations. During the warmer week when the elephants might have been more likely to seek shade, they were actually more active due to the modified yard. However, weather affected the amount of keeper/elephant interaction in the old yard observations since the elephants were not given baths on the colder mornings.



**Implementing a new exercise regime can start with one small step.** (Photo by Peter Hnath)

While it appears that keepers spent more time with the elephants in the modified yard, the renovation did not magically give them more time to spend with the elephants. On average, keepers have about two hours a day to groom feet, bathe, and train the elephants. Even though training sessions run about the same length, during the modified yard observational period, there was a behind-the-scenes tour and morning baths.



In order to improve future studies, keepers should change their schedules for feeding and training times to reduce stereotypic weaving as an anticipatory behavior. Also, if more time is available, they should focus on increasing exercise for the elephants. Both changes could affect foot care, and further studies may show a reduction in foot problems based on the increase in activity levels.

Lastly, it is suggested that other institutions consider conducting similar studies of any facility modifications. Normally, keepers are not afforded the opportunity to observe their animals all day. Taking the time to do so for this study not only provided enormous amounts of information about RPZ's elephants, but it also gave an assessment of the yard modification. Hopefully in the long run, this will serve as a catalyst for future facility improvements.

### **Conclusion**

After modifying the exhibit, the program seems to be heading in the right direction. Although it is too early to assess the impact on foot problems, the results show an overall increase in elephant activity. In the constant evolution of RPZ's elephant program, the never-ending quest to improve will continue to benefit all aspects of elephant husbandry.

### **Acknowledgements**

We give special thanks to Sherryl Volpone for her hard work on the graphs. We also want to acknowledge our teammates Gale Ferrick and Bruce Eneboe for their patience and participation in the study. It was not easy taking away all that great enrichment. Lastly, we want to thank staff at RPZ for their support of this project.

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## **FROM** **ZooLex**

### **Second ZooLex Anniversary - Exhibit #50**

This ZooLex Newsletter announces exhibit presentation number 50. We have published 50 presentations of animal exhibits from 19 zoos in Australia, Austria, Germany, Netherlands, Switzerland and the United States since the launch of the ZooLex website in August 2000, including translations in German and Spanish.

Publishing in ZooLex is free. We offer the option to submit information online or off line. Please contact [zoolex@zoolex.org](mailto:zoolex@zoolex.org) and let us know what kind of material you have available. We will find a way to present your animal exhibits in ZooLex.

Through our presentations at conferences and our newsletters we have expanded ZooLex services to new audiences, particularly in Asia and Latin America. We are pleased to make a special offer, particularly to those who have recently started using ZooLex. Records in the ZooLex Firms listing are free until the end of 2003 for all companies and organizations submitting information by the end of June 2003: <http://www.zoolex.org/advertise.html>

# **Blackpool Zoo Pioneers Ground-breaking Elephant Conservation Project in India**

Four members of a team representing the UK's Blackpool Zoo recently returned from India where they have instigated a revolutionary micro-chipping project on captive Asian Elephants.

Indian Government Elephant conservation groups have an ongoing situation with the control and movement of captive elephants in the North Eastern part of the Province since a law banning the use of elephants in the logging industry was introduced. Owners of these now redundant animals have been illegally selling their elephants in the southern part of the country where they are used as tethered 'Temple Elephants' or hired out for celebrations and promotions. The animals are also smuggled into neighboring Nepal where they are still used as working elephants.

Poachers are also catching wild elephants and falsely selling them to wealthy southern private owners as 'captive' animals. Both actions seriously effect the areas elephant populations that have already seen massive reductions due to the loss of natural habitats.

Elephant staff and managers at Blackpool Zoo have close affinity and contact with their Indian counterparts and after hearing of the problems decided to offer some practical and innovative help. Blackpool Zoo manager Iain Valentine was the first to respond to the problem and came up with the idea to offer a micro-chipping initiative. "We had known for some time that the situation in India was getting more difficult and we thought that a micro-chipping procedure may be a long-term solution. We contacted the Directors of Project Elephant in India with an offer to help and they welcomed our proposal with great enthusiasm," said Valentine.

On 23 August Valentine and three other representatives from Blackpool Zoo that included a veterinary specialist, the head elephant keeper and the zoo's public relations officer flew out to Delhi with over a thousand microchips and associated readers in their luggage. Manufacturers in the UK who were all keen to support the initiative had donated the readers and chips. The team members also personally financed their own travel and accommodation for the expedition.

The first workshop took place at the Delhi Zoo where three elephants were 'chipped' by the zoo vet and the initial Indian trainees. Further workshops and micro-chipping training then took place in Guwahati in Assam, Tezpur in Pradesh and in Badapur. At the end of two weeks over 50 elephants had already been microchipped and a whole brigade of Indian animal medical specialists had been trained to carry on with the total program.

Valentine was delighted with the success of the venture and pleased that the Blackpool Zoo has made a positive an long-term contribution to the conservation and welfare of Asian elephants in their natural environment.

"The Indian Government has now made the registration and micro-chipping of elephants mandatory and soon all movement of elephants will be monitored and checked. Anyone who is found to have an elephant without a 'chip' will face prosecution," added Valentine. "Micro-chipping has been around for some time and we have been using a similar process in our zoo for the last four years to monitor movement and to control breeding lines. Technology in this field has advanced tremendously and we now have a new generation of microchips which last the lifetime of the animal, stay in place once inserted and that can be re-written with extended 'fields' of data and medical information. This means that a complete record including health treatment and condition can be kept of each animal throughout it's whole life," said Valentine.



Blackpool Zoo staff are continuing to monitor the progress of the program and maintaining close communications with Indian Government officials to ensure its completion and success. The team have already been invited back to continue their work and to exchange information and ideas on elephant conservation.

For further information please contact Tony Williams at Blackpool Zoo at phone: 01253 830812 or 07970 377707; or email him at: [awilliamspr@aol.com](mailto:awilliamspr@aol.com)

*Source: ZooNews Digest #212 10-15 September 2002*

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## **Mexican Gray Wolves Making Successful Transition**

For the third consecutive year, Mexican gray wolves have “reproduced in the wild in Arizona and New Mexico, a biologically “significant” milestone that reintroduction program biologists maintain is an indication the wolves are functioning “more as a wild population” says the *Arizona Republic*, AP 9/9/02. The USFWS contends that the success of wolves breeding in the wild means the agency can start to “segue from a reintroduction program to more of a management program” but conservationists caution that opposition from ranchers remains the biggest obstacle the wolves face.

*Source: GREENlines Issue #1705 9-16-02*

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# **REMINDER**

## **Three Types of Data Transfer Forms Available from AAZK**

Just a reminder that three different types of data transfer forms are available to requesting institutions from AAZK at no charge. These forms are designed to be used whenever an animal is shipped from one facility to another so that important information on that animal can be passed on to the receiving keeper and veterinary staffs.

The following forms are available by contacting Barbara Manspeaker at 1-800-242-4519 (U.S.) and 1-800-468-1966 (Canada), or by emailing your request to [aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com)

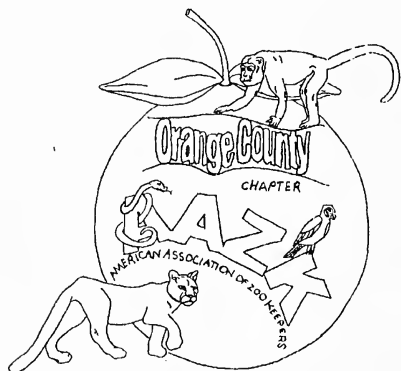
- **Animal Data Transfer Form (ADTForm)** - includes information on diet, reproductive history, general medical history/physical conditions, and enclosure/maintenance data on animal(s) being shipped.
- **Enrichment Data Transfer Form (EDTForm)** - includes information on behavioral history, enrichment currently used and how implemented (food, exhibit, artificial, etc.), safety concerns for animal(s) being shipped.
- **Operant Conditioning Data Transfer Form (OCDTForm)** - includes general background information, training specifications, training schedule, behaviors trained and methods used for animal(s) being shipped.

These forms are provided free of charge as a professional courtesy of AAZK, Inc. We encourage all zoos, aquaria and other animal care facilities to adopt the use of these forms when shipping animals. We extend our thanks to the following institutions for assisting in the printing expenses for these forms: Columbus Zoo (ADTForm), Arizona-Sonora Desert Museum (EDTForm), and Disney's Animal Kingdom (OCDTForm).

### Orange County AAZK Chapter

Last month we published a brief report of the first major fundraiser for this newly chartered Chapter and how they successfully raised \$3,000.00. This month we are pleased to publish a little more information on what they did and how they did it. *Ed.*

The Orange County (Santa Ana, CA) AAZK Chapter's first major fundraiser was called "1st Annual Monkey Chow" and featured a bar-be-que dinner with prizes, keeper-led tours and an animal presentation. The event was open to anyone wishing to attend but most guests were zoo staff and their friends and families.



Chapter Treasurer Kristina Smith notes that all 15 of the Chapter's members sold tickets to the event and they put up a flyer on the event at the zoo entrance. They also sent out a flyer and their Chapter newsletter to places they thought might be interested. The results of this hard work was an attendance of 200 people!

The bar-be-que dinner was not catered, but done entirely by Chapter members. They asked local businesses and grocery stores to donate food or gift certificates and they kept it simple. Each member made a different kind of salad and brought a bag of chips and they made hot dogs, BBQ chicken and veggie kabobs, served soda and finished with ice cream for dessert.

Says Kristina: "It was so successful because all the members of our Chapter were dedicated and worked really hard to make it such a great event. And we couldn't have done it without the support of our zoo (Santa Ana Zoo). We were all very excited and surprised when we found out we raised so much money for our first big event!"

## Chapter News Notes

Congratulations to the Orange County Chapter on this highly successful event. We expect to hear more great things from this new AAZK Chapter as time goes on. Great job!!

### Galveston Chapter of AAZK

This newly chartered AAZK Chapter at Moody Gardens (Galveston, TX) has adopted a logo which was designed by Chapter member and officer Heather Leeson. It was officially adopted by the Chapter in July 2002.

The logo (seen below) features the outline of the State of Texas and four animals. The penguin is for the Aquarium at Moody Gardens and the butterfly represents the Rainforest at that facility. Thanks to Chapter Liaison Regan Gipson for this information.



## **Will Your Chapter's Current Logo Be in the 2003 AAZK Chapter Logo Registry?**

In May 2002, we sent a letter to each existing AAZK Chapter requesting information on their Chapter's logo. We wanted to know if their registered logo remained the same, if they had a new logo, or were in the process of designing a new logo. Unfortunately we have not heard back from quite a few Chapters. Please check the listing below to see if your Chapter is included. We want to include the most up-to-date information available when we publish the 2003 Chapter Logo Registry, so if your Chapter has not responded, please let us know. Chapters that do not verify their current logo with us will be represented in the Logo Registry by the most recent logo we have on file for them.

Chapters submitting logos should send a clear, clean copy along with information on the designer and the date the logo was adopted. Logos may be sent on disk or electronically (to: [akfeditor@zk.kscoxmail.com](mailto:akfeditor@zk.kscoxmail.com)) as JPEG or TIFF files. When mailing, DO NOT fold the logo.

### **••Submit by 1 December 2002 to be included in 2003 AAZK Chapter Logo Registry••**

Send to: Logo Registry, AAZK, 3601 SW 29th St., Ste. 133, Topeka, KS 66614-2054.

#### **Chapters that have no existing logo on file:**

Central Illinois Chapter, Oakland Zoo Chapter, National Aviary, Lion Country Safari, Akron Chapter of AAZK, Greater Cincinnati Chapter, West Michigan Association of Zoo Keepers, Southwest Kansas AAZK Chapter, Riverside Zoo AAZK Chapter, Snake River AAZK Chapter, and Wildlife Safari AAZK Chapter.

#### **Chapters currently designing a logo, but have not yet submitted their logo:**

Sedgwick County Zoo AAZK Chapter and Pittsburgh AAZK Chapter

#### **Chapters that have a logo on file, but have not responded verifying that it is the current logo for their Chapter:**

Roger Williams Park Zoo AAZK Chapter, Beardsley Zoo AAZK Chapter, Philadelphia Zoo AAZK Chapter, Greater Baltimore Chapter of the AAZK, Chesapeake AAZK Chapter, The Virginia AAZK Chapter, South Carolina Chapter of

AAZK, Zoo Atlanta AAZK Chapter, Florida Suncoast AAZK Chapter, Birmingham Chapter, Louisville Zoo AAZK Chapter, Toledo Zoo AAZK Chapter, Detroit Zoo AAZK Chapter, Minnesota Zoo AAZK Chapter, Northern Lights AAZK Chapter, Lincoln Park AAZK Chapter, Topeka AAZK Chapter, Omaha AAZK Chapter, Oklahoma City Zoo AAZK Chapter, Caldwell Zoo AAZK Chapter, San Antonio Zoo AAZK Chapter, El Paso Del Norte AAZK Chapter, Utah Chapter of AAZK, Arizona AAZK Chapter, Rio Grande AAZK Chapter, Los Angeles Zoo AAZK Chapter, San Diego AAZK Chapter, EFBC AAZK Chapter, Portland AAZK Chapter, Puget Sound AAZK Chapter, and Edmonton Chapter of AAZK.

**LET US HEAR FROM YOU SOON !!**

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 10th of each month to: Opportunity Knocks/AKF, 3601 SW 29th St., Suite 133, Topeka, KS 66614-2054. Please include closing date for positions available, and when setting these dates keep in mind that because of bulk-mail, most readers do not receive their AKF until the middle of the month or later. There is no charge for this service and fax or e-mail listings of positions which become available close to deadline are accepted. Our Fax is (785) 273-1980; e-mail: akfeditor@zkscoxmail.com< We are no longer located at the Topeka Zoo, so please note new address to avoid delays in processing.*

The following three (3) positions are open at Out of Africa Wildlife Park, 9736 N. Ft. McDowell Rd, Scottsdale, AZ 85264. Phone (480)-837-6683; Fax (480)837-7379; [www.outofafricapark.com](http://www.outofafricapark.com)< Positions open until filled. Call or send resumé and salary requirements to Dean Harrison.

**Working Supervisor...** for small mammals, African hoofed stock, reptiles and birds. Must be degreed and experienced with prior managerial experience and public speaking ability. All animals are hands-on. Some veterinary and nutritional expertise a plus. Salaried position (45 hrs/week usual), full benefits, includes weekends.

**Head Reptile Keeper...**degreed, experienced, including venomous. Some veterinary experience and public speaking required. Full benefits, 40 hours per week, including weekends.

**Head Bird Keeper...** degreed, experienced. Some veterinary and public speaking required. Full benefits, 40 hours per week, including weekends.

**Elephant Trainer...**Full-time position at Wildlife Safari, Winston, OR. Responsibilities of position include the care and management of the Safari's 1.2 African elephants, managed in a free-contact system. Duties include assisting in the daily care and husbandry of elephants; including handling elephants in ride and show situations. Public speaking and strong guest service skills are desired. Other work-related duties include daily raking, shoveling, sweeping, hosing, and disinfecting of exhibits, tools, ponds, and barn. This position requires the ability to push and carry heavy loads. Must be able to walk several miles daily. The successful candidate should possess good communication skills along with the ability to work in a team environment. Requirements include: 1) Minimum of three (3) years working with elephants in a free-contact management system; 2) Ability to lift 60 lbs.; 3)Must be willing to work weekends, split shifts, and/or holidays and night feeds as assigned; 4) Must be able to work outdoors in all types of weather; and 5) Ability to obtain a valid Oregon drivers license. Professional EMA members in good standing are encouraged to apply. Salary is dependent on experience. References requested. Please send resume and references to: Dinah Wilson/Elephant Manager, c/o Wildlife Safari, P.O. Box 1600, Winston, OR 97496; or email: [carol@wmni.net](mailto:carol@wmni.net)< Position open until filled.

**Alaska SeaLife Center Internship** (Animal Husbandry - Avian Department)... The Alaska SeaLife Center, a non-profit organization in Seward, Alaska, is accepting applications for internship opportunities in the avian department. The Alaska SeaLife Center is dedicated to understanding and maintaining the integrity of the marine ecosystem of Alaska through research, rehabilitation and public education. This is a full time position for twelve weeks, available year-round. This position introduces basic animal care and husbandry techniques; duties include (50%) assisting in the daily care and maintenance of the Center's avian collection and (50%) assisting the Education Department. Applicants must be currently enrolled in an accredited college or university with a primary area of study in Biology, Zoology, Psychology or other animal related field. Recent college graduates may also apply. Applicants must have the ability to communicate effectively; understand and follow written and oral instruction; have a good sense of balance in order to maneuver around the exhibits and holding areas; able to lift 40 pounds; able to adapt to an ever-changing work environment; and available to work weekends and holidays. Public speaking skills are highly encouraged. This is an unpaid position, housing and/or a food stipend may be available for a limited number of candidates. Interns are responsible for all travel expenses. Inquire with Annette D'Alessandro, Intern Coordinator, Alaska SeaLife Center, P.O. Box 1329, Seward, AK 99664; Phone: (907)224-6343 Fax: (907)224-6320 ,Web Site: [www.alaskasealife.org](http://www.alaskasealife.org)

*Positions posted with AAZK, Inc. may also be found on  
our website at [www.aazk.org](http://www.aazk.org)*

*Also, you may want to check out the AZA Member Institution job listings  
at <http://www.aza.org>*

AAZK Membership Application

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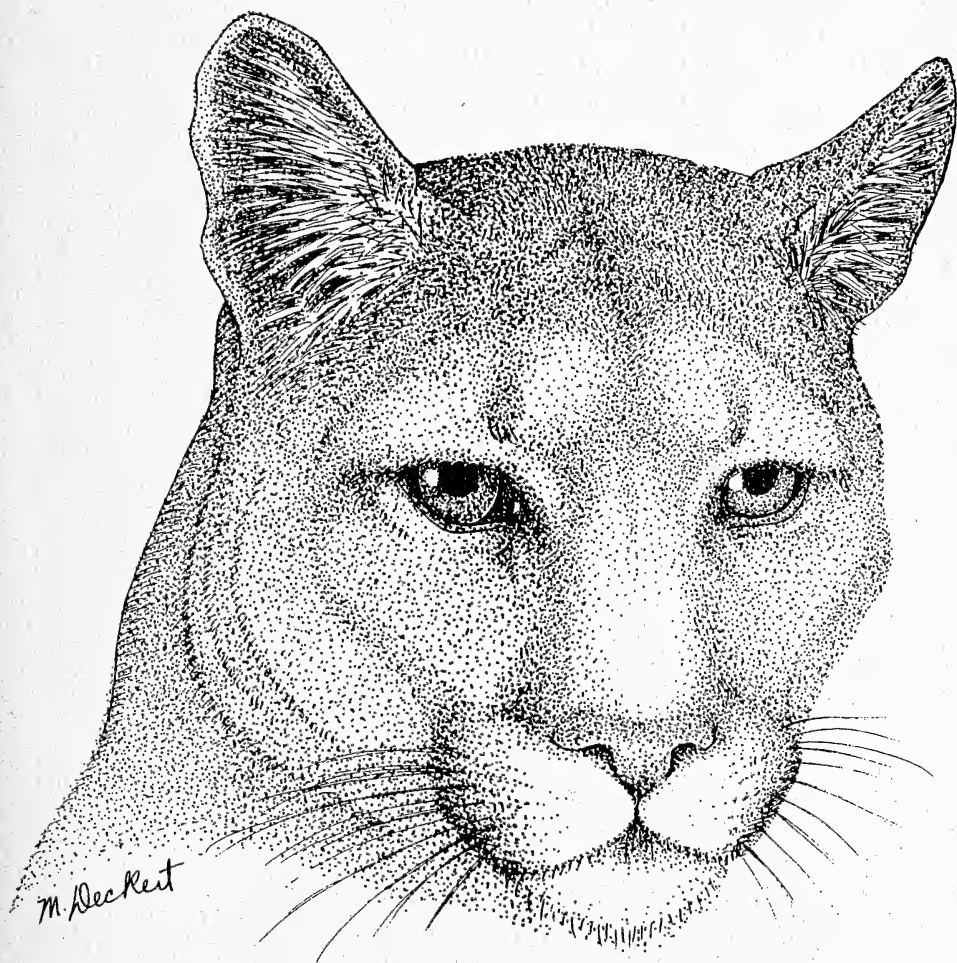


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25th Anniversary  
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# ANIMAL KEEPERS' FORUM



**The Journal of the American  
Association of Zoo Keepers, Inc.  
NOVEMBER 2002**

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also serves as AAZK Liaison to the American Zoo & Aquarium Association

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Kathy Kelly, Silver Springs, MD - Project M.A.R.C. (Making A Realistic Contribution)

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Beth Stark, Toledo Zoo

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Biological Values for Selected Mammals, 3rd Edition - Jan Reed-Smith, John Ball Zoo

AAZK Enrichment Notebook - Lee Houts, Folsom City Zoo



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## About the Cover.....

This month's cover features a Puma (*Panthera concolor*) also known as a cougar or mountain lion drawn by Mary Deckert, a Docent at the Los Angeles Zoo, Los Angeles, CA. These are solitary animals that prefer to live in places that are hard to reach such as forests, deserts and mountains. It may hunt at any time of the day or night, but most often hunts its prey at twilight. Wild sheep, deer and peccaries are its usual prey although it will also take smaller mammals and even birds. After a kill, the puma will sometimes hide part of the carcass for another meal. This largest of North American cats measure up to eight feet in length, stand 25 inches at the shoulder and weigh up to 220 lbs. The females produces 2-3 cubs every other year after a gestation period of between 86-96 days. The cubs remain with the mother for up to 20 months while she teaches them the necessary survival and hunting skills. The puma has a shrill, whistling call often described as more like a "scream". They are also the largest of the big cats that actually "purrs". Thanks, Mary!

Animal Keepers' Forum publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Authors are encouraged to submit their manuscripts on a disk as well as in hard copy form. Manuscripts submitted either on disk or electronically as attachments to an email should be submitted in Microsoft WORD. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than** 5.5" x 8.5" (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy black and white **or** color prints (minimum size 3" x 5" [8cm x 14cm] ) are accepted. Clearly marked captions should accompany photos. Please list photo credit on back of photo. Photographs may be submitted electronically as either JPEG or TIFF file attachments.

Articles sent to Animal Keepers' Forum will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for AKF. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone, fax or email contributions of late-breaking news or last-minute insertions are accepted as space allows. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (785) 273-1980; email is akfeditor@zk.kscoxmail.com<

**Deadline for each regular issue is the 10th of the preceding month.**

**Dedicated issues may have separate deadline dates and will be noted by the editor.**

Articles printed do not necessarily reflect the opinions of the AKF staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

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E-Mail Addresses: You may reach Barbara Manspeaker at AAZK Administrative Offices at: aazkoffice@zk.kscoxmail.com< You may reach Susan Chan and *Animal Keepers' Forum* at: akfeditor@zk.kscoxmail.com<

**AAZK Website Address: [www.aazk.org](http://www.aazk.org)**

**BFR Website: <http://bfr.aazk.org>**

# ***Scoops & Scuttlebutt***



## **The 1<sup>st</sup> International Congress of Zookeepers - Second Call for Papers**

The first-ever International Congress of Zookeeping will be held at Vogelpark Avifauna, The Netherlands from 3-7 October 2003. This cooperative effort is being organized by zoo keeper organizations from the U.S. (AAZK/IOC), Great Britain (ABWAK), The Netherlands (de Harpij), Australia (ASZK), Germany (Berufsverband der Zootierpfleger), Spain (Asociación Ibérica de Cuidadores de Animales Salvajes) and France (Association Francophone des Soigneurs animaliers).

This is the **Second Call for Papers** for this conference.

**The deadline for abstracts is the 31 January 2003.**

Abstracts for oral and poster presentations on all aspects of zoos and zookeeping are being sought. These should be in English and no more than 600 words long. Short descriptions of five-minute video presentations on enrichment, enclosure design, husbandry techniques for your own zoo are also welcomed. The conference program will include oral and poster presentations, video sessions and workshops. The conference language will be English.

Abstracts should be emailed in RTF or MS Word format to: [a.bagnall@chesterzoo.co.uk](mailto:a.bagnall@chesterzoo.co.uk) Or sent to: Andrew Bagnall, ICZ Programme, Chester Zoo, Caughall Road, Upton-by Chester, Chester CH2 1LH, United Kingdom. For specific program enquiries contact [a.bagnall@chesterzoo.co.uk](mailto:a.bagnall@chesterzoo.co.uk)

For more information on the conference visit <http://www.iczoo.org> or send a blank message to [ICZ\\_News@yahoogroups.com](mailto:ICZ_News@yahoogroups.com) for regular updates.

## **Bat TAG Announces Small Grants Program**

The AZA Bat TAG would like to announce a small grants program. Grants are available to zoo and aquarium staff who are engaged in scientific efforts related to bat management, conservation education, *in situ* biological conservation, veterinary health, nutrition, zoological research and reproduction, especially projects involving threatened and endangered species.

The application deadline is 1 January 2003, with awards of up to \$500 being announced in February 2003. Program application and guidelines are available from Steven M. Wing, AZA Bat TAG Co-chair, Riverbanks Zoo, P.O. Box 1060, Columbia, SC 29202-1060 or [swing@riverbanks.org](mailto:swing@riverbanks.org)

## **3rd Annual Animal Behavior Management Alliance (ABMA) Conference**

A Second Call for Papers has been announced for this conference which will be held 23-28 February 2003 in Tampa, FL. It is hosted by Busch Gardens Tampa and the Center for Elephant Conservation. The keynote speaker is Jack Hanna. The conference theme is "Advancing Animal Welfare and the Visitor Experience through Positive Behavior Management Techniques"

Contact [Thad.Lacinak@AB-AdventureParks.com](mailto:Thad.Lacinak@AB-AdventureParks.com) or 407-363-2651 for an information and abstract submission packet.

## **Important Dates for This Conference**

- Submission deadline: 12/21/02
- Authors notified: 1/16/03
- Pre- registration deadline: 12/17/02
- Hotel room guarantee deadline: 1/24/03

## **HerpDigest, Inc.**

Free, Weekly, Electronic Newsletter on Reptile and Amphibian Conservation and Science. Check it out at <http://www.herpdigest.org>

## New Website for Rhino Resource Center

Dear Colleagues

We are happy to announce that there is a new website for information on the rhinoceros. The URL address is [www.rhinoresourcecenter.com](http://www.rhinoresourcecenter.com)

At the moment you will be able to find some general information about the aims of the Rhino Resource Center (RRC) and to search through the database of all publications on the five species of recent rhinoceroses, over seven thousand of them, ranging in date from Roman times to the most current ones. This is only a first step. Soon I hope that we will be able to present an updated and corrected version of the bibliography (now with 7800 references).

The second phase is a database containing detailed records on the distribution and status of the rhinos in Asia and Africa. This second database on distribution has the data from the Encyclopedia of the Rhinoceros and as such contains a wealth of information taken from the sources given in the list of references. Later, information on other subjects will be made available.

The Rhino Resource Center is now in the process of being formally started. The Species Survival Commission of IUCN has endorsed the work and I will use the address of their office in Cambridge, U.K. The work is being sponsored by the International Rhino Foundation (IRF) and SOS Rhino. The RRC website is accessible as links from the sites of SOS Rhino ([www.sosrhino.org](http://www.sosrhino.org)) and IRF ([www.rhinos-irf.org](http://www.rhinos-irf.org)).

The RRC aims to collect all published data on the rhinoceroses and to make these available to researchers and field managers around the world. As it is not always easy to keep up with the latest literature or to have an extensive knowledge of previous work done in a certain area of interest, it is envisaged that the RRC will assist the international rhino community in gaining access to all sources.

Yours Sincerely,  
Rhino Resource Center  
Dr. Kees Rookmaaker  
[rhino@rookmaaker.freeserve.co.uk](mailto:rhino@rookmaaker.freeserve.co.uk)

c/o IUCN Species Survival Programme  
219c Huntingdon Road  
Cambridge CB3 0DL  
United Kingdom

## Junior Keepers' Journal Ceases Publication

Because of the failure of the Junior Keeper Program to achieve its membership number goals, the AAZK Board has discontinued this program and ceased publication of the *Junior Keepers' Journal*. The Board wishes to thank Mark de Denus of Reid Park Zoo for his past efforts as Editor of *JKJ*. Apparently it was a publication/program whose time had not yet come, as membership numbers were never high and continued to decline so that the Board could no longer justify putting more financial commitment into this project.

## Please Note New Email Addresses for AAZK Administrative Office/AKF

Members are asked to note that there are new email addresses for both the AAZK Administrative Offices and for *Animal Keepers' Forum*. These changes became necessary when our cable service switched from Roadrunner to their own network. Some people have still been sending to our old email addresses--this information gets blown away in cyberspace, so please note new addresses!!

The address for Barbara Manspeaker at AAZK Administrative Office is:  
[aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com)

The address for Susan Chan and *Animal Keepers' Forum* is:  
[akfeditor@zk.kscoxmail.com](mailto:akfeditor@zk.kscoxmail.com)

>>Please begin using these new addresses immediately<<

# Conference 2002 Wrap-Up

## BRANCHING OUT



A big thanks goes to all the delegates who attended the 2002 joint AAZK/AZH National Conference in Kansas City. Over 360 delegates attended with 280 being from AAZK and the Kansas City Zoo staff! Though we are a bit tired and sad from the conference being over, we are happy to know that there was a lot of positive feedback from the conference and zoo day activities. While we are still balancing the books and drinking the leftover beer from the hospitality suite, we believe that all will have been a great success. Over \$8,500 was raised in the silent and live auctions with portions going to AZH, AAZK and conference expenses. The donations from the Grayson Harding estate will bring AAZK, Inc. approximately \$1,100. Once again, a big thanks to

everyone who attended, helped and encouraged! See you in 2003 in Cleveland (we will be the ones with the big smile on our face and beer in our hand).

--Jacque, Kristen and Beth

**Conference Product Liquidation Sale:** \$15.00 gets you a T-shirt/bag/shippin& handling. We only have M, L, XL shirts left. Shirts are grey, bags are black and feature the Conference logo shown above. To place your orders call Kristen or Jacque at 816-513-5700 xt. 25703 or 24626. Or place your order via email: [AAZKAZH2002@aol.com](mailto:AAZKAZH2002@aol.com) (cash and checks only, please). Going fast - Order NOW!!!!

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## Conference 2002 Proceedings

We will be publishing the combined Conference Proceedings for the recently completed AAZK/AZH Conference in December with an anticipated mailing in early January. The December issue of *AKF* will include an order form as well as information on the papers/posters and workshops which will be included in this publication. Watch for it in the next *AKF* and place your order so as not to miss out on this information-packed resource. Cost to AAZK members will be \$25.00; Non-members \$40.00. *Ed.*

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# 2002 AAZK/AKF Award Recipients

The following are recipients of awards presented at the 2002 AAZK Natinal Conference held in Kansas City, MO from 6-10 October. The Meritorious Achievement Award and Environmental Enrichment Award are determined from nominations sent to the AAZK Awards Committee. This is the first year the Enrichment Award has been given. Recipients of the Certificates of Appreciation and Recognition as well as the Distinguished Service Plaque are determined by the AAZK Board of Directors. The Excellence in Journalism Awards are given by the *AKF* editorial staff.

## Meritorious Achievement Award

presented to

Patricia Swenson, Oregon Zoo, Portland, OR

for her pivotal contribution as lead keeper toward the survival of the Washington State population of pygmy rabbits which resulted in the first Idaho pygmy rabbits bred in captivity. Development of husbandry protocol for pygmy rabbits was also noted.

## Environmental Enrichment Award

presented to

Bryan Martin, New England Aquarium, Boston, MA

for the development of a formal enrichment program for the aquarium's sea lions, seals, and sea otters which included collecting and tracking enrichment items, and creating an enrichment rotating schedule and a rating system. Also noted was the development of an enrichment handbook for volunteers.

## Environmental Enrichment Award

presented to

Dawn Neptune, Utah's Hogle Zoo, Salt Lake City, UT

for the implementation of a zoo-wide structured diverse and effective enrichment program which allowed for enrichment to be quantifiable and qualifiable. Organization of an enrichment committee, the Environmental Enrichment Day, and work with the marketing and education departments to get schools and businesses involved in the enrichment program were especially noted.

Certificate of Appreciation  
presented to

Jeff Reinhardt, Kansas City Zoo, AZH National Conference Co-Chair  
Loraine Cutler, Kansas City Zoo, AZH 2002 National Conference Co-Chair  
Kansas City Zoo - AAZK 2002 National Conference Host Institution

Certificate of Recognition  
presented to

Diane Callaway, Omaha's Henry Doorly Zoo, *Junior Keepers' Forum*, Editor  
Jacque Blessington, Kansas City Zoo, AAZK 2002 National Conference Co-Chair  
Beth Schaefer, Kansas City Zoo, AAZK 2002 National Conference Co-Chair  
Kristen Wolfe, Kansas City Zoo, AAZK 2002 National Conference Co-Chair

Distinguished Service Plaque  
presented to

Greater Kansas City Chapter of AAZK  
AAZK 2002 National Conference Host Chapter

BRANCHING OUT



# Excellence in Journalism Awards

presented to

Lee Houts, Folsom Zoo, Folsom, CA

"Where's the Beef? Supplemental Carcass Feeding"

2001 AAZK Conference Proceedings

Lisa Taylor, Lincoln Park Zoo, Chicago, IL

"Random Organization: Organizing an Enrichment Program at the Lincoln Park Zoo"

2001 AAZK Conference Proceedings

Marie Perez, Lincoln Park Zoo, Chicago, IL

"Random Organization: Organizing an Enrichment Program at the Lincoln Park Zoo"

2001 AAZK Conference Proceedings

Denise Wagner, San Diego Wild Animal Park, Escondido, CA

"A Novel Approach to Mother-rearing a Western Lowland Gorilla"

2001 AAZK Conference Proceedings

Dharma Webber, Bat World Sierra, Placerville, CA

"Colonial Roosting Requirements of Captive Microbats"

AKF December 2001 – Special Bat Issue

Tina Sals, Brookfield Zoo, Chicago, IL

"A Non-Intrusive Diet Program for Milky Eagle Owls"

August 2001 AKF

Pete Riger, Nashville Zoo, Nashville, TN

"*Rousettes aegypticus* – An Overview: Exhibition, Infant Mortality  
and Colony Management"

Dec. 2001 AKF – Special Bat Issue

Roby Elsner, Lincoln Park Zoo, Chicago, IL

"Techniques That Promote the Psychological Well-being of Captive Primates and  
Their Application in the Husbandry and Management of Gorillas and Chimpanzees  
at Lincoln Park Zoo at Lester F. Fisher Great Ape House"

February 2002 AKF

Christine McKnight, Minnesota Zoological Garden, Apple Valley, MN

Outstanding Cover Art – Plains Zebra (*Equus burchelli*)

April 2002 AKF



# From the President.....

By the time you read this we will be back from what I am sure will be a wonderful and informative conference in Kansas City. Many thanks go to the Kansas City Chapter and the Kansas City Zoo for supporting AAZK and its mission.

I wanted to take time to remind everyone of just a few of the things your Association offers to you and the zoo and aquarium community. One of the ways AAZK supports its motto "Dedicated to Professional Animal Care" is through its publications and data forms.

The Animal Data Transfer Form (ADTForm) has become the standard form of most zoos when animals are transported between facilities. The ADTForm was conceived by Bernie Feldman and its printing is supported by the Columbus Zoo. The purpose of this form is to ensure the transfer of information on diet, reproductive history, general medical history/physical conditions, and enclosure/maintenance data to the animal's receiving institution staff.

The Enrichment Data Transfer Form (EDTForm) is quickly becoming as widely used as the ADTForm. This was the work of William K. Baker, Jr. and Kayla Grams and its printing is supported by the Arizona-Sonora Desert Museum. The EDTForm's purpose is the transfer of information on an animal's behavioral history, enrichment currently used for the animal being shipped and how it was implemented, as well as safety concerns to the receiving institution's staff.

Most recently Beth Stark and the Animal Behavior Management Committee have developed the Operant Conditioning Data Transfer Form (OCDTForm) with its printing supported by Disney's Animal Kingdom. This form includes general background information, training specifications, training schedule, behaviors trained and methods used in training for the animal being shipped.

Use of these three forms helps to ensure that the receiving institution's staff has the necessary information to make the transition for the animal as safe and successful as possible.

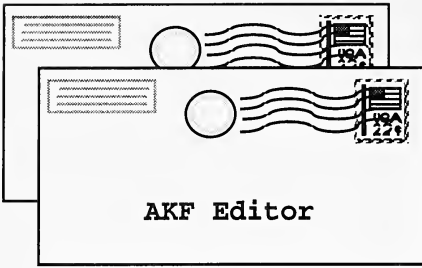
AAZK offers all of these forms free of charge as a professional courtesy to the zoo community. Contact Barbara Manspeaker at the Administrative Office if you would like copies of these data forms sent to you.

These forms are just one of a number of ways AAZK supports professionalism in animal care and the mission of the entire zoo and aquarium community. I encourage you to make full use of them in your next animal transfer. As new trends emerge in the field, AAZK will respond to your needs and continue its commitment to professional animal care.



Kevin R. Shelton, President AAZK  
The Florida Aquarium, Tampa, FL





## Letters to the Editor

*Readers are welcome to comment upon material published in Animal Keepers' Forum through a Letter to the Editor. We welcome a free exchange of ideas benefiting the zoo keeping profession.*

Dear Editor,

Recently, I had the opportunity to read in the October 2002, *Animal Keepers' Forum*, the Viewpoint by Louis Dorfman, Animal Behaviorist at the International Exotic Feline Sanctuary. Not in response, but in support I would have to say, "I couldn't have said it better myself". Louis, whose reputation in the industry precedes him, has astutely pinpointed the problem which plagues our country, the exotic pet trade.

As I've been in zoological management for a number of years now, I can assure you that there are few telephone calls more painful than turning away exotics that were purchased for misguided reasons as "pets" and now overwhelm their "owners". It is a symptom of our times that the exotic pet trade produces animals faster than zoological facilities and wildlife refuges can keep pace or even fiscally respond to on an annual basis.

Approximately, two years ago my wife (also a zoologist and trainer) and I rescued a 1.0 cougar from the exotic pet trade. Thankfully, we had the experience, finances, and permits to intercede on this cat's behalf. Still, the reality was that we devoted an average of four hours a day in animal husbandry, environmental enrichment, exhibit maintenance, and multiple training sessions. Clearly, this is outside the purview of the layman and I am convinced more than ever that non-professionals outside the wildlife and zoological fields lack the expertise and skill to maintain exotic cats in captivity and should not be licensed or permitted to hold them.

As the problem of the exotic pet trade continues to escalate, reflection gives pause for thought and a new way needs to be found to address this problem. I have seen far too many malnourished and inbred cats with genetic faults in my career, some abused or near death when rescued by wildlife refuges (truly, the exotic cat's last, best hope). Clearly, we need to come together as an industry with our lawmakers and stop the proliferation of exotic cats held as "pets", and develop education programs that reflect not only conservation, but the inherent hazards associated with these animals. In closing, I might also add that the International Exotic Feline Sanctuary is to be applauded for its commitment and the quality of life it provides to unwanted exotic cats.

W.K. Baker, Jr., Curator  
Little Rock Zoo  
Little Rock, AR

*(Editor's note: The International Exotic Feline Sanctuary is located in Boyd, TX)*

# Coming Events

**Cuban Amazon Parrot (*Amazona leucocephala*) PMP/Consortium Master Plan Meeting II** - 9-10 November, 2002. Hosted by Miami Metrozoo, 12400 SW 152 St., Miami, FL 33177-1499. An Ice Breaker will be held for participants on 8 November 2002, in the new temporary exhibits building called Dr. Wilde's World. No registration cost is involved and some meals are provided. For further information please contact: Rachél Watkins Rogers, Zoo Registrar and Regional Studbook Keeper/Species Manager; [RRogers@miamidade.gov](mailto:RRogers@miamidade.gov); (305) 251-0400, ext. 253; Fax (305) 251-5701.

**International Marine Animal Trainers Association (IMATA) 30th Annual Conference** - 10-15 November 2002 in Orlando, FL. Hosted by SeaWorld Orlando. Contact Al Kordowski at [alan.kordowski@seaworld.com](mailto:alan.kordowski@seaworld.com) or visit [www.imata.org](http://www.imata.org)<

**The Ninth North American Crane Workshop** - 21 to 25 January 2003 in Sacramento, CA. Plans for the workshop include an ice-breaker on Tuesday evening, technical sessions on Wednesday and Friday, and an all-day field trip on Thursday, with an awards banquet on Friday evening. For more information contact Tom Hoffmann, NACWG Treasurer, at [Thoffmann@hoffmanns.com](mailto:Thoffmann@hoffmanns.com)<

**Animal Behavior Management Alliance Conference**- 23-28 February 2003. Hosted by Busch Gardens Tampa Bay and the Center for Elephant Conservation. For information contact Thad Lacinak at (407) 363-2651 or email him at [Thad.Lacinak@AB-AdventureParks.com](mailto:Thad.Lacinak@AB-AdventureParks.com)<

**Eleventh Annual International Association Of Avian Trainers and Educators Conference** - 12-15 February 2003 in Portland, OR. Hosted by the Oregon Zoo and held at the DoubleTree-Lloyd Center Hotel. For more information contact Cathi Wright ([wright@metro.dst.or.us](mailto:wright@metro.dst.or.us)) or Shannon LaMonica ([lamonicas@metro.dst.or.us](mailto:lamonicas@metro.dst.or.us)) or call them at (503) 220-5713.

**National Wildlife Rehabilitators Association (NWRA) Symposium 2003** - 11 - 15 March, 2003 in Newport, RI. Rehabilitation and Beyond - Broadening Our Horizons. For further information on this event go to: Website <http://www.nwrawildlife.org> or email [nwra@nwrawildlife.org](mailto:nwra@nwrawildlife.org)

**Association of Avian Veterinarians 24th Annual Conference & Expo** - 25-29 August 2003 in Pittsburgh, PA. To be held at Pittsburgh's Westin Hotel and the David L. Lawrence Convention Center. Theme is "Take Flight in Pittsburgh". Program will include lectures and Master Classes. Call for Papers - you may submit applications electronically, by mail or by fax. To submit on the Internet go to [www.ConferenceOffice.com/aaav](http://www.ConferenceOffice.com/aaav). If you wish to receive an application form or more

information on presenting call the AAV Office at (303) 756-8380, ext. 13. Deadline is 25 October 2002. Fax# is ((303) 759-8861.

**First International Conference on Zookeeping in 2003** - The Netherlands - Will be held between 2-10 October at Birdpark Avifauna. For further information please visit: <http://es.geocities.com/jxarles20><

**Sixth International Conference on Environmental Enrichment**- 2-7 November 2003 in Johannesburg Zoo, South Africa. The provisional conference attendance fee is US\$250, but this will be confirmed and reduced based on price and currency fluctuations towards the end of 2002. South Africa is an exciting destination that boasts a number of world class zoos. Further information can be obtained from our website at [www.jhbzoo.org.za](http://www.jhbzoo.org.za)< Please feel free to contact Mathew van Lierop who will be coordinating the conference at +27 11 646 2000 ext 233 or at [mathew@jhbzoo.org.za](mailto:mathew@jhbzoo.org.za)


**NOTICE:** The International Serow Summit/the 2nd Symposium on Capricornis and Related Species, originally planned for 2002 by the Japan Serow Center has been delayed until the Fall of 2004. Details will be published as they become available.

## 2003 AZA Regional Conferences


Eastern Regional - 26-29 March 2003. To be hosted by the Riverbanks Zoo & Garden, Columbia, SC.

Central Regional - 30 April - 3 May, 2003. To be hosted by the Milwaukee County Zoo, Milwaukee, WI.

Western Regional - 14-17 May 2003. To be hosted by the Calgary Zoo, Calgary, Alberta, Canada.



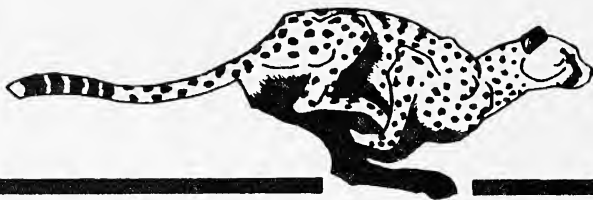
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# REACTIONS

## *A Question and Answer Forum for the Zoo Professional on Crisis Management*

*By William K. Baker, Jr., Curator  
Little Rock Zoo, Little Rock, AR*

### **Question**

What do you prefer and recommend in regards to transportation in a crisis situation, vehicle or on-foot?

### **Comments**

This question has been the subject of serious discussion over the past few years and I've spent considerable time trying to see the argument from both points of view. Vehicles are highly effective tools for the vast majority of crisis situations, except animal escapes, that's when problems occur in strategic thinking.

Vehicles inherently provide a greater degree of safety and security during a crisis management situation; they also provide a means to quickly reach the site with staff and equipment if necessary, and the means to withdraw quickly from an event site if needed. Once at the site, the staff has an effective portable shelter allowing them to observe and evaluate, rather than rushing into a dangerous situation. Conversely, a vehicle is not without its drawbacks. First, a vehicle can simply fail due to a mechanical malfunction or poor maintenance. Second, a vehicle has the potential to alarm an escaped animal due to a shift in flight distance. Darting or shooting from a vehicle has its own particular problems. The arc of fire through a window is extremely narrow and will most likely require the vehicle to be repositioned periodically until a shot can be taken. In addition, firing and driving at the same time isn't a realistic option. This will require a driver and a separate staff member in the passenger seat handling the projector/rifle and a really high degree of effective communication. Another consideration is what are you calling a vehicle? Some individuals find an electric cart acceptable, while others use only cars or trucks.

Approaching an escaped animal on foot is extremely effective as you have command of the situation, in other words, you can easily see and hear everything around you, which provides a 360 degree arc of fire in extrem circumstance versus taking a shot out the window of a vehicle. It also allows for rapid movement into areas that may not readily permit vehicle access due to landscaping or exhibit design. Moving by foot can often be less intrusive than a vehicle and permit access without provoking flight. Searching on foot for an animal that has dropped out of site in a facility has the potential to be more effective than a vehicle, which might push an animal into deeper hiding. A final point, vehicles will not fit inside the vast majority of holding areas and night houses as a general rule, at some point you will have to physically enter the structure on foot if an event occurs there. Conversely, traveling on foot is not without its drawbacks. It is potentially hazardous when dealing with dangerous animals. Not only could the approach trigger an attack if the flight distance is miscalculated, but an unforeseen trigger could result in an attack.

So, is there an answer to this? Yes, effectively a compromise has to occur and vehicles are the optimum choice when the event permits their practical use and foot travel is effective when vehicles are not. However, if foot travel is utilized then staff members should travel in pairs, one with the dart projector and the other with a firearm. As a result, the projector operator should be using the binoculars whenever possible and all personnel should be equipped with radios. Communication is the key to a safe resolution, as the crisis evolves, so too should the methodology in response.

**Next Month:** From time to time you have mentioned emergency supplies for response and repairs after a crisis, could you expand on that?

If you would like to submit a question for this column or have comments on previously published materials, please send them to AAZK, Inc., 3601 S.W. 29th St., Suite 133, Topeka, KS 66614 Attn: Reactions/AKF.

(About the Author: Since 1985 Bill has been active in the fields of science, zoology, and wildlife management. His education and experience include a B.S. in wildlife management and post-graduate studies in zoology, Lab and Museum Assistant, Shoot Team Leader, ERT Member, Large Mammal Keeper, Senior Keeper, and Zoo Curator at various zoological facilities. His area of research is crisis management in zoological institutions, which draws upon practical experience and training as a Rescue Diver, Hunter Safety Instructor, NRA Firearms Instructor, and Red Cross CPR/First Aid Instructor.)

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## GREENlines Issues Update

### One-Third of Primates Face Extinction

A new report has found that “one-third of the world’s primate species now face a serious risk of extinction” says BBC News. “The World’s Top 25 Most Endangered Primates” by the Conservation International and the IUCN primate specialist group warns that the list was “just the tip of the iceberg” and that for each primate on it any one of several other equally endangered species might have been chosen instead.” Vietnam topped the list with 20% of the listed primates, with China (16%) and Indonesia (12%) following closely, “Vietnam is at risk of undergoing a major primate extinction spasm within the next few years if rapid action is not taken.” *GREENlines Issue #1726 10-16-02*

### Ferret Reintroduction Proposed

One of North America’s most endangered mammals, could once again be living in areas where the “last populations” were last known to exist in South Dakota during the 1970s, if a proposal to reintroduce the black-footed ferret to the Rosebud Sioux Reservation is approved says the USFWS. Under the reintroduction plan, the ferrets would be designated as a “nonessential, experimental population” to allow for “greater management flexibility” and to avoid conflicts with private landowners and existing human uses. The reintroduction would be the ninth since 1991 and second one on tribal lands in South Dakota.

In other ferret news, some 22 black-footed ferrets, slated for reintroduction in Mexico, have instead been released on the site where the Bureau of Land Management first released the ferrets in Montana last November reports the *Billings Gazette*. The ferrets became available because of delays in completing the paper work needed to send them to Mexico. There are currently eight reintroduction sites in Wyoming, Arizona, Utah, South Dakota, Montana and Mexico with an “overall recovery goal to have 1,500 ferrets living in 10 locations with no less than 30 breeding adults in each colony by 2010.” *GREENlines Issue #1708 9-19-02 and Issue #1719 10-4-02*

# AAZK Book Sale

Sale price is 20% off the Suggested Price.  
Previous books may still be available, with some price increases.

<u>Sugg. \$</u>	<u>Sale\$</u>	<u>Item Title/Description</u>
\$14.00	\$11.20	<u>Noah's Garden: Restoring the Ecology of Our Own Backyards</u> - Sara Stein. This book interweaves the author's efforts to build a garden that welcomes all creatures with her exploration into the ecology of gardens. 294 pgs. paperback.
\$11.95	\$ 9.56	<u>Stokes Purple Martin Book: the Complete Guide to Attractng and Housing Purple Martins</u> - Donald & Lillian Stokes & Justin L. Brown. This book provides information to start and maintain a backyard purple martin habitat. 96 pgs. paperback.
\$29.95	\$23.96	<u>Giats: The Colossal Trees of Pacific North America</u> - Audrey Crescoe. This book has stunning full-color photographs and a short detailed summary of big-tree lore. Species include redwoods, Sitka, spruce and many others. 164 pgs. hardcover.
\$16.00	\$12.80	<u>One River; Exploration and Discoveries in the Amazon Rain Forest</u> - Wade Davis. Two interwoven tales of scientific adventure bring to life the riches of the Amazon basin and bear witness to the destruction of its indigenous culture and natural wonders over two generations. 544 pgs. hardcover.
\$24.95	\$19.96	<u>Bats in Question: The Smithsonian Answer Book</u> - Don E. Wilson. This book covers all aspects of bat biology in a practical question-and-answer format. 192 pgs. paperback.
\$19.95	\$15.96	<u>Skulls and Bones: A Guide to the Skeletal Structures and Behavior of North American Mammals</u> - Glenn Searfoss. Packed with detailed, informative b/w illustrations, tips on building a bone collection, listings of environmental organizations and scientific equipment suppliers. Using this book, one can quickly identify mammal bones and comprehend what the structures indicate about the animal's lifestyle. 288 pgs. paperback.

**To Order:** List the items you are ordering along with your name and complete mailing address. Include a shiping fee of \$3 for the first item and \$2 for each additional item. Checks payable to "AAZK Book Sale" (US FUNDS ONLY - NO CASH OR COD's please). Sorry we cannot process credit card orders. **Call or fax for shipping fees when ordering frm outside the continental United States before sending any money. We will work to find the best form of shipment.**

**Mail requests to:** AAZK Beardsley Chapter, Attn. Linda Tomas, 1875 Noble Ave., Bridgeport, CT 06610-1600. Phone: 203-394-6563 Fax: 203-394-6566 Email: beardsleyz@aol.com

# ABC's

## ABC's: Animal Behavior Concerns and Solutions

*A Question & Answer Forum for Animal Professionals*

©2002 by Diana Guerrero, Independent Behavior Consultant  
Ark Animals of California, Big Bear Lake, CA



### **Question(s)**

American Museum. We cannot get our bobcat to cooperate. Do you have any suggestions?

### **Answer**

The question concerns a two-year-old female bobcat (*Lynx rufus*). This animal was handled until about six months of age. Cage cleaning was done within this animal's exhibit until she became increasingly rough. Keepers ceased entering the exhibit freely. Staff were able to get her into a holding cage so they could spot clean and completely strip the cage once a week. (No diagrams of this exhibit, details on routine, diet, or detailed history were supplied.)

This animal then began to avoid her holding cage when keeper staff were present. First, the problem only prevented spot cleaning, now it has escalated to where the animal will not cooperate at all. This animal is not highly food motivated. Toys, treats and attention have been attempted, but she stands in the holding cage door to prevent confinement. If the animal accepts treats, she bolts out of the holding area. Response to confinement is increased aggression. (No details of what type of aggressive responses were given.)

Many bobcats get more aggressive as they age. In this case, there are training and trust issues contributing to the problem:

#### *Trust destroyer #1: Tricking the animal*

This animal does not want to be confined and exhibits behavior that leads me to believe that in addition to learning that she could bully staff, she was tricked into confinement rather than being trained to cooperate. Tricking an animal destroys any trust. Trust and clarity must be rebuilt in order to proceed.

#### *Teaching Toleration/Cooperation: Desensitize to procedures/Don't be too predictable*

This animal recognizes that the presence of keeper staff in certain situations/times of day will lead to a negative holding cage interaction. Desensitization to the regular routine and staff interactions is necessary. Forming a positive holding cage association, or developing an alternate procedure would be beneficial.

### **Strategies**

There are different steps you can take depending on your staff size and schedules. Try:

### **Barrier**

The quick temporary solution would require staff to work in teams, using a barrier to keep the animal away from the keeper who is cleaning. A physical barrier (plywood shield or something similar) can be handled by one staff member whose sole duty is to monitor the animal and keep her

away from the other keeper. This will allow cleaning until the issue is resolved. You should be able to determine the animal's critical spatial distance during this practice, and be able to maintain that without causing too much stress for the animal or keepers.

### ***Training***

Frequent, short training sessions should be done to help this animal regain trust. Food reward should consist of preferred tidbits (very small flavor bursts, not something that has to be chewed). Bits of liver, heart, or chicks can work well. Success is rewarded with the bulk of the diet. Training should include the following:

#### ***Desensitize to guillotine door***

The holding area door should be moved while the animal is positioned on a target/station in the exhibit. Rewards are given for non-response to movement of that door. Next, this animal should be moved to different targeting/stationing locations within the exhibit for longer and longer durations and a non-response to door movement.

Then, moving the animal in and out of the holding area with long durations of target holding/stationing without closing or moving the door should be attempted and done until the animal relaxes.

Finally, moving the door slightly and rewarding success while the animal is in the holding area can be attempted. The door should not be closed at this stage. Eventually you can approximate the door closure with the animal in the holding cage.

Let the animal escape if she needs to. You can give a time out if this happens, coming back later to try it again at the previous level of success. Remember, you have to get the trust factor back, so don't rush it. You might consider replacing the door (temporarily) with clear Plexiglas during training. It might be helpful.

#### ***Crate or other location***

Consider avoiding the negative association with the holding area by attempting to use a new crate or other location to house the animal during cleaning. If you can get the animal to station (or crate) and keep her attention focused on the trainer, play or related activities, you might find success with these options.

#### ***Extended Target***

If you do not already have this animal trained to target or station, you should train this behavior. Eventually you can extend the duration and move the animal from "A to B." Moving the animal between locations will make voluntary compliance more desirable since it is rewarded and becomes part of the routine.

#### ***Expose and occupy the animal daily without consequences***

Work with this animal multiple times daily without attachment to a specific outcome. Find ways to challenge her and keep her busy. Environmental enrichment within the holding cage through scents and other items should be considered to help create a different positive association.

About the Columnist: Since 1978 Diana Guerrero has worked professionally with both wild and domestic animals. She has been affiliated with and certified by a variety of animal programs in the USA and Europe. She currently writes, consults and leads safaris. Information and enrollment for her safaris, seminars, training courses and animal career programs can be found at her website: <http://www.arkanimals.com>. Publications and other training support items may also be purchased at the site. Questions for ABC's should be submitted to Diana directly via email: [arkabc@arkanimals.com](mailto:arkabc@arkanimals.com), through the ABC'S questionnaire on her website, or via regular mail: c/o ARKANIMALS.COM, P.O. Box 1989-215, Big Bear Lake, CA 92315 USA.



# **AAZK Announces New Members**

## **New Professional Members**

Rebella Horner, **Beardsley Zoo (CT)**; Alison L. Shaub and Jennifer Soto, **Cohanzick Zoo (NJ)**; Andrea White, **Prospect Park Zoo (NY)**; Christina Castiglione, **Aquarium at Niagara (NY)**; Kesha Walker, **Pittsburgh Zoo (PA)**; Kay Buffamonte, **Philadelphia Zoo (PA)**; Jessica Alison, **Santa Fe Community College Teaching Zoo (FL)**; Karen Small, **Gatorland (FL)**; Jennifer MacNaughton, **Miami Metrozoo (FL)**; Tara Shivers, **Birmingham Zoo (AL)**; Thomas Tenhundfeldm **Cincinnati Zoo (OH)**; Laura Reisse, **International Crane Foundation (WI)**; Alicia A. Whitaker, **Kansas City Zoo (MO)**; Heather Davis and Steffany German, **Houston Zoo (TX)**; Brooke Munday, **Austin Zoo (TX)**; Terry Griffith, **Utah's Hogle Zoo (UT)**; Jennifer Miller, **Sea World/San Diego (CA)**; and Andrew Goldfarb, **Pt. Defiance Zoo & Aquarium (WA)**.

## **Renewing Institutional Members**

Central Park Zoo  
New York, NY  
Don Moore, Curator

Chaffee Zoological Gardens  
Fresno, CA  
Ralph Waterhouse, Director

## **Renewing Contributing Members**

William H. Disher, Volunteer  
San Diego Zoo, San Diego, CA  
San Diego Wild Animal Park, Escondido, CA

## **San Diego Wild Animal Park To Import Elephants from Overcrowded Swaziland Reserve**

The USFWS has granted the necessary permits for the San Diego Wild Animal Park to import seven African elephants currently residing at a large game reserve in Swaziland, a tiny country located in southeastern Africa. As of this writing a date for importation had not been set.

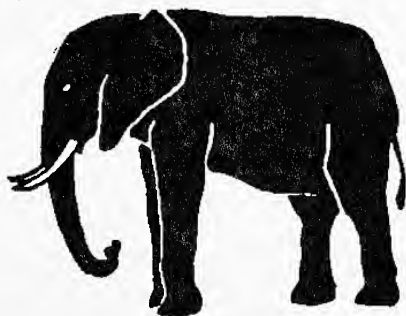
The elephants are currently being held at the Mkhaya Game Reserve. These animals, ranging in age from 10-12 years, were raised together and are in their prime reproductive years, according to Larry Killman, deputy director of collections for the San Diego Zoo and Wild Animal Park. He noted that the Swaziland reserve, like many other African national parks and sanctuaries, has reached its carrying capacity for elephants.

"It's just a case of population growth. Eventually they run out of habitat. Eventually they have habitat destruction and they eat themselves out of house and home," Killman said.

If the Wild Animal Park had not agreed to take the elephants, they would have been culled to control the population.

The population of African elephants in zoos and parks in the U. S. and Canada numbers some 200 animals, but many, like the three females currently housed at SDWAP, are older and past their prime reproductive years. According to Killman, these older females will be moved to another institution prior to the arrival of the wild-caught animals from Swaziland.

The relocation process will take several months and will cost the San Diego Wild Animal Park more than \$1 million. Killman said the elephants will be flown to their new home in Escondido, CA.



*Excerpted from an article by Elizabeth Fitzsimons  
Copley News Service 9/18/02*

# The Capture and Introduction of Desert Bighorn Sheep at the Arizona-Sonora Desert Museum

By

John Pasco and Brenda King, Keepers  
Department of Mammology and Ornithology  
Arizona-Sonora Desert, Museum, Tucson, AZ

The Arizona-Sonora Desert Museum in Tucson, AZ was founded in 1952 with the mission of fostering public awareness and appreciation of the Sonoran Desert. The museum seeks to fulfill its mission by exhibiting indigenous species in naturalistic exhibits which depict representative habitats. One of the signature mammalian species on display is the desert bighorn sheep, (*Ovis canadensis mexicana*) which the museum has exhibited for the past three decades.

The museum's bighorn sheep exhibit opened in 1972. Modeled after an actual site called the White Tanks near Dateland, AZ, the exhibit is a large, open depression with a prominent "mountain" at the rear of the exhibit. Since it first opened, the exhibit has been home to 14 sheep. It has also been the site of a productive captive breeding program, with six successful births of a total of nine pregnancies.

Five of the sheep born here eventually moved on to other institutions. The sixth and most recent addition, a ewe born in March 1995, is still here on exhibit. However, following the deaths of her father in 1998, and then her mother in 1999, she became the exhibit's sole occupant. A decision was subsequently made to enlarge the museum's "herd", not only to enhance visitor appeal, but also to provide for the ewe's socialization and to resume captive breeding.

The museum's initial choice was to acquire a ram from the Phoenix Zoo. His introduction to our exhibit on 14 November 2000 proved less than successful, however. In Phoenix, the ram had been kept in a spacious, open enclosure which afforded far greater all-around visibility than did our exhibit. After an initial inspection of his new surroundings, he made repeated attempts to jump out of the exhibit, at one point coming perilously close to succeeding. His persistent efforts raised genuine concern that he might either eventually succeed or harm himself trying. He was quickly removed from the exhibit and returned to Phoenix.

Our search for another suitable animal already in captivity was equally unsuccessful. There are only eleven other desert bighorn sheep of the *mexicana* subspecies currently in other institutions. Of these, only four are rams, two of which are related to our ewe. That left the only available alternative of capturing an animal from the wild.

Of the four subspecies of desert bighorn, two, *Ovis canadensis mexicanus* and *Ovis canadensis nelsoni*, occur in Arizona. The current state bighorn population seems to be relatively stable. It is estimated by the Arizona Game and Fish Department (AGFD) to number approximately 6,000 individuals. This estimate is based in part on annual aerial surveys of the Kofa National Wildlife Refuge in southwestern Arizona, where the largest herds occur. The surveys have been conducted jointly since 1980 by the AGFD and the United States Fish and Wildlife Service (USFWS).

While the herds in the Kofa Mountains continue to thrive, populations have declined in other regions in the state where they once flourished. Human encroachment is the primary factor in this decline. As Monson and Sumner (1980) explain, "The bighorn has for the most part continued to be one of the most intractable and unmanageable wilderness animals. Where the wilderness has faded away,

so usually has the bighorn.” Development has fragmented habitats and disrupted water sources; domestic livestock have introduced diseases; and the presence of dogs can be highly disruptive, especially during breeding season. In addition, the suppression of wildfires to protect human habitations has facilitated the unnatural growth of trees and shrubs. This growth inhibits the open lines of sight sheep need to see and escape from potential predators, thus greatly reducing the sheep’s comfort zone (USDA, 2001).

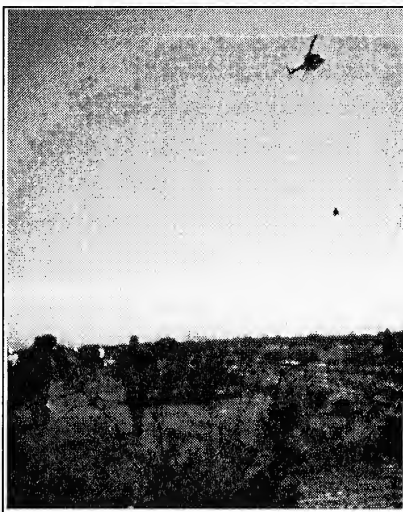
Since 1957, AGFD has actively managed sheep populations by transplanting sheep from the Kofa Mountains to other areas. According to Gutierrez-Espeleta *et al.* (1998), “Bighorn sheep management has focused on improving the viability of existing populations and reintroducing sheep to their previous range and these efforts have become increasingly successful.” Under this program, 1,210 desert bighorn sheep have been relocated, 535 of them in the last ten years alone. While over 80% of the sheep have remained within Arizona, others have been sent to Colorado, Utah, Texas and New Mexico (Lee, 1998).

The Capture and Release Plan for 2001 called for the capture of as many as 30 sheep, 22 ewes and eight rams. These numbers were arrived at based on surveys of the Kofa National Wildlife Refuge which yielded an estimated population of 812 animals. Of the 30 animals to be captured, one male lamb and one female lamb were designated for donation to the Desert Museum, while the remainder were to be released in the Harcuvar Mountains in west-central Arizona.

While the entire operation was conducted under the auspices of USFWS and AGFD, it was made possible only through funding and volunteer support from the Arizona Desert Bighorn Sheep Society (ADBSS), an organization of sportsmen dedicated to helping land use and wildlife agencies increase the state’s sheep populations. Bighorn sheep are still hunted in Arizona, and bighorn permits are highly sought after. In 1998, over 7,000 applications were received for the 97 available permits. The cost of the 2001 relocation operation was approximately \$36,000, or \$1,200 per sheep, all of which was donated by ADBSS.

The 2001 capture was scheduled for 13 and 14 November. Prior to the capture dates, a member of the museum maintenance staff had constructed two padded wooden crates especially for the two lambs we hoped would be made available to us. On the evening of 12 November, five representatives from the museum loaded the crates into two large vans and drove the 240 miles from Tucson to Yuma, AZ, where they spent the night. The next morning, they drove the remaining 70 miles to the capture staging area, a dry campsite near King Valley in the center of the Kofa National Wildlife Refuge.

Upon arriving at the staging area at 0730 hrs., they found approximately 65 people on site, including USFWS and AGFD staff and volunteers from the ADBSS. Among that number several veterinarians were on hand to attend to any possible medical need that might arise. All sheep brought to the staging area were to be inspected for stress, injury or disease. Body temperature and blood oxygen saturation were to be monitored. Each animal would have blood drawn to screen for disease, be given a broad spectrum antibiotic, and be treated with Ivermectin® for parasites. In addition, all animals to be released would be marked with a colored, numbered ear tag, and approximately half of these would also be fitted with radio collars as well.



**Capture helicopter arriving at staging site with wild sheep in sling.** (Photo by Shawnee Riplog-Peterson)



**Newly caught wild lamb being transported at staging site via immobilization stretcher.** (Photo by Shawnee Riplog-Peterson)

Among the first arrivals at the staging site was a ewe lamb estimated to be about seven months old. Once her exam was completed, it was determined that she was a suitable candidate for the museum. She was thoroughly wetted down to keep her cool, then placed in her crate inside the air-conditioned van. To everyone's surprise and delight, she seemed quite calm and began eating almost immediately.

At 1300 hrs., about one hour after the ewe's capture, a male lamb approximately nine months old arrived. He, too, proved to be in excellent condition and was also designated for the museum. He was wetted, crated and placed in the second van. Once he was securely in place, the return trip to the museum began.

Meanwhile, the capture process continued, with a total of 25 additional sheep eventually being caught. Upon completion of their medical examinations, these sheep were loaded in crates aboard a transport truck and driven to the Harcuvar Mountains. Once there, the sheep were successfully released at the previously designated release site.

The six-hour journey of the museum's two lambs proved equally uneventful, with the ewe continuing to eat during the trip. When the lambs arrived at the museum, they were initially quarantined in two adjoining 9' x 9' x 9' (2.7m x 2.7m x 2.7m) concrete holding rooms that were connected by means of a floor-level hydraulic shift door. This door was only 2' wide by 2 1/2' high (0.6m x 0.8m), but the sheep quickly became adept at kneeling down and scooting from one room to the other.

The floors of the rooms were furnished with heavy rubber stall mats, which were in turn covered with straw. "Furniture" was provided by several bales of alfalfa, which the sheep enjoyed climbing on. The lambs were fed a diet of timothy grass and alfalfa, and were gradually introduced to treats such as grain pellets and chopped carrots and yams. They were also given another dose of Ivermectin® for treatment of external parasites.

All captures were to be made by means of hand-held net-guns shot from helicopters. There were two helicopters present, along with a tanker truck for refueling them. Once captured, the sheep were blindfolded and hobbled, then removed from the capture net and flown back to the staging site either by sling or inside the helicopter. Upon arrival at the site, the sheep were placed in immobilization stretchers while medical procedures took place. No immobilizing drugs of any kind were used in the entire process.

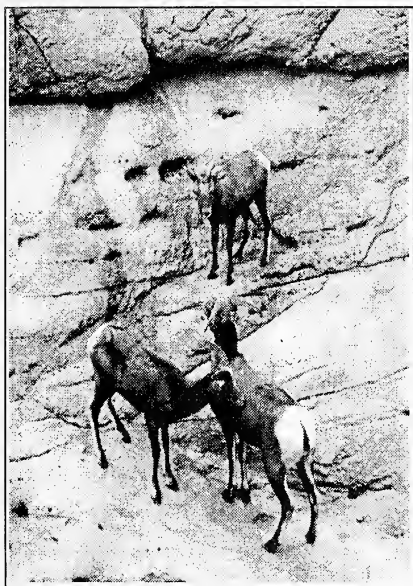


**Our lamb being carried to staging site under the watchful eyes of local television crews.** (Photo by Shawnee Riplog-Peterson)

Throughout the quarantine period, keepers routinely went in and sat with the sheep in the hopes of acclimating them to people and making them more tractable. The lambs would accept food from the hand and allow keepers to touch them, although the male remained more wary than the female.

At the end of the quarantine period, the lambs were moved to the two adjoining 6' x 8' x 7' (1.8m x 2.4m x 2.1m) concrete shifting stalls adjacent to the sheep exhibit. These stalls were also provided with a floor covering of rubber stall mats and straw. The solid metal hydraulic shift door that led to the exhibit was kept closed, but the ewe on exhibit was able to approach the door from the exhibit side so the animals could get used to each others' scents. Keepers continued to spend time with the lambs on a daily basis.

At the same time, keepers also readied the exhibit for its new occupants. The back wall of the exhibit where the Phoenix ram had come closest to jumping out was modified with additional artificial rock work. Large, overhanging mesquite limbs were strategically placed at other locations along the wall that might look a bit too inviting to a pair of agile lambs.



**Male lamb investigates resident female as female lamb looks on from above.**

*(Photo by Brenda King)*

The introduction of the lambs to the exhibit and to the adult ewe took place on 12 December, 2001. The male lamb entered the exhibit within 15 minutes of the shift door being opened. The resident adult ewe, who had been sitting on the ledge above, was initially quite startled, jumping up and running around the top of the mountain. A short while later, when the ewe lamb had also entered the exhibit, the adult ewe slowly approached the two lambs. Several prolonged sniffing sessions followed. The lambs seemed to accept the ewe very quickly, with the ewe lamb especially following her around. The male exhibited some herding behavior, trying to get the two females to go where he wanted. He also "jousted" occasionally with the older ewe for some of the prime high spots in the exhibit, but no aggression of any kind was noticed.

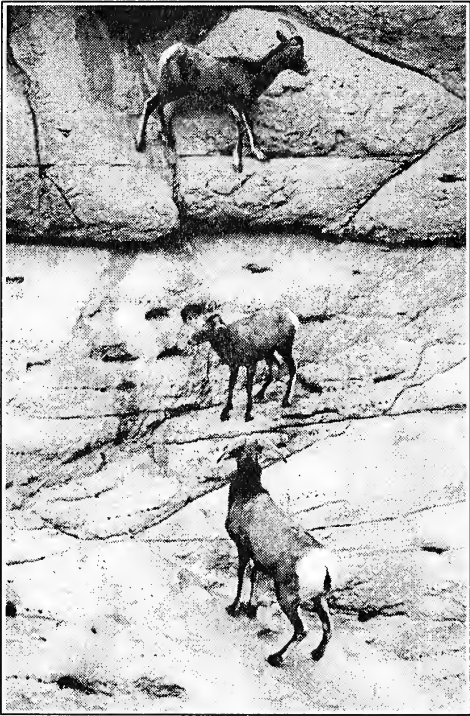
It has been nearly six months since the introduction now, and the sheep are doing well. With the restoration of the museum's herd, keepers have already noted the hoped-for changes in the resident ewe's behavior. Now that she has companions, she is much more playful and is less easily stressed, particularly when she and the lambs are locked in the shift stalls. She has also displayed some maternal tendencies towards the ewe lamb, spending much of her time close by her.

All three sheep typically spend the balance of their day on the highest part of the exhibit, coming down primarily to feed and drink. While the male lamb is still wary of shifting at times, the female lamb has remained highly approachable and tractable. Though it is not thought likely that the two lambs are related, this will be confirmed by DNA testing. If all goes well, we look for breeding to take place in 2003/04.

There is, of course, an unavoidable irony in removing sheep from the wild if populations are already in peril. It must be recognized, however, that for species in which wild populations are threatened, captive breeding is a necessary element in insuring that these species will survive. Infusion of new

blood into the captive population is essential if successful breeding is to continue. In this regard, the museum's captive breeding program follows the recommendations made by the American Zoo and Aquarium's Caprinae Conservation Assessment and Management Plan formulated in 1993.

It is the philosophy of the museum that our exhibit animals serve as ambassadors for their wild cousins. Hopefully, educating the public and exposing it to animals such as the desert bighorn sheep will instill a desire to protect them and contribute to their survival in the wild.



**New lambs begin to explore their exhibit at the Arizona-Sonora Desert Museum under the watchful eye of the resident female Desert Bighorn Sheep. (Photo by Brenda King)**

**A new herd is formed at ASDM.**

*(Photo by Brenda King)*



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- USDA Forest Service Santa Catalina Ranger District (2000) DESERT BIGHORN, <http://www.fs.fed.us/r3/coronado/scrd/nathist/nature/bighornsheep.htm>

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## REMINDER

### Three Types of Data Transfer Forms Available from AAZK

Just a reminder that three different types of data transfer forms are available to requesting institutions from AAZK at no charge. These forms are designed to be used whenever an animal is shipped from one facility to another so that important information on that animal can be passed on to the receiving keeper and veterinary staffs.

The following forms are available by contacting Barbara Manspeaker at 1-800-242-4519 (U.S.) and 1-800-468-1966 (Canada), or by emailing your request to [aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com)

- Animal Data Transfer Form (ADTForm) - includes information on diet, reproductive history, general medical history/physical conditions, and enclosure/maintenance data on animal(s) being shipped.
- Enrichment Data Transfer Form (EDTForm) - includes information on behavioral history, enrichment currently used and how implemented (food, exhibit, artificial, etc.), safety concerns for animal(s) being shipped.
- Operant Conditioning Data Transfer Form (OCDTForm) - includes general background information, training specifications, training schedule, behaviors trained and methods used for animal(s) being shipped.

These forms are provided free of charge as a professional courtesy of AAZK, Inc. We encourage all zoos, aquaria and other animal care facilities to adopt the use of these forms when shipping animals. We extend our thanks to the following institutions for assisting in the printing expenses for these forms: Columbus Zoo (ADTForm), Arizona-Sonora Desert Museum (EDTForm), and Disney's Animal Kingdom (OCDTForm).



# ***ELECTION.....2003***

Well, it is coming up on a new year, and with that there will be elections for the Board of Directors in 2003. There will be four positions available. Those are held by Jacquie Blessington (she was appointed to fill Diane Callaway's unexpired term), Kevin Shelton, Jan Reed-Smith and Linda King whose terms end with the 2003 Conference. New Board members will serve a four-year term from the close of the 2003 National Conference until the conclusion of the 2007 National Conference. If you or any one you know would like to serve on the Board, please nominate them and get all the paperwork to: Sheri Leavitt, NEC Chair, UTMB Galveston, 301 University, Galveston, TX 77555-0621; or fax them @ 409-772-8453. All nominations need to be received **no later than February 28, 2003**. For information or questions, please call me at 409-772-9977 or 281-534-4224. If you have ever wanted to make a difference in AAZK, now is the time to step up to the plate and give us your best.

## **Duties of the Board of Directors**

For a more detailed explanation of the expanded duties of the Board, refer to the By-Laws (available upon request from Administrative Offices in Topeka, KS).

- 1) Select, appoint or remove officers, committees, agents and employees of the Association, including - prescribing powers and duties.
- 2) To control and manage the Association and its property, passing upon acquisition and disbursements with approval of a majority of the Board.
- 3) To formulate policies, rules and regulations in accord with the Constitution & By-Laws.
- 4) To uphold the Constitution of AAZK and the policies of the Association.
- 5) To appear at Board meetings, to accept Board assignments and to devote the time to communications pertinent to all Board business, including answering correspondence promptly and efficiently.

## **Qualifications for Nomination**

- 1) Nominee must be a Professional Member of AAZK, Inc. in good standing and must have been a member of the Association for at least one year.
- 2) Nominee must be presently employed as an animal keeper/attendant, veterinary technician, research technician or other personnel directly connected with the care, feeding and educational display of captive wildlife in a recognized zoological park, aquarium, animal reserve or other animal care facility in the U. S. or Canada and must have been in the zoological field for at least two years.



## Nomination Procedure

### 1) Nominator Form:

- a. List the name of the nominee, phone, address, and institution.
- b) State in 150 words or less the reason(s) why the nominee warrants election to the Board of Directors.
- c) Nominator signs forms and mails to NEC Chairperson.
- d) Notifies nominee that they nominated him/her for the Board of Directors.

### 2) Nominee Biographical Form:

- a) Professional background: places of employment, length of service, titles.
- b) Membership in AAZK: National and local Chapters, number of years, offices held, involvement in activities.
- c) Educational background.
- d) Membership in Affiliate Organizations: (AZA, CAZPA, Audubon, etc.)
- e) State in 500 words or less why you would like to be on the BOD and any other pertinent information. (optional)
- f) References (one or two)
- g) Nominee signs forms and mails to NEC Chairperson.

**NOTE:** Candidate is ineligible for nomination if **both** the nominator and nominee biographical **forms** are not **complete** and **returned** to the NEC Chairperson **by 28 February 2003** . Send to: Sheri Leavitt, NEC Chair, UTMB Galveston, 301 University, Galveston, TX 77555-0621; or fax them @ 409-772-8453.

# **Nomination Form for** **AAZK Board of Directors**

## **Qualifications for Nomination:**

- 1) Nominee must be a Professional Member of AAZK in good standing and must have been a member of the Association for at least one year.
2. Nominee must be presently employed as an animal keeper/attendant by a recognized zoological institution or aquarium in the U.S. or Canada and must have been in the zoological field for at least two years.

1. Name of Nominee:

Address:

Phone:

E-mail:

Institution:

Director:

2. State in 150 words or less the reason(s) why the nominee warrants election to the AAZK Board of Directors.

3. Signature of Nominator: \_\_\_\_\_

4. Form must be received by the NEC Chairperson by 28 February 2003. Send to: Sheri Leavitt, NEC Chair, UTMB Galveston, 301 University, Galveston, TX 77555-0621; or fax them @ 409-772-8453.

# **Nominee Biographical Form** **for AAZK Board of Directors**

**1. Name:**

**Address:**

**Phone:**

**E-mail:**

**PLEASE LIST THE FOLLOWING INFORMATION**

**2. Professional Background: (places of employment, length of service, titles)**

**3. Membership in AAZK:**

**a) National: number of years**

**Activities:**

**b) Local Chapter(s): number of years, offices held, involvement in activities.**

**4. Educational Background:**

**5. Membership in Affiliate Organizations (AZA, Audubon, WWF, CAZPA, etc.)**

**6. State in 500 words or less why you would like to be on the BOD and any other pertinent information (use additional paper if necessary)**

**7. References (one or two); give name, address and phone number where they can be reached:**

**8. Nominee's Signature: \_\_\_\_\_**

**9. Form must be received by the NEC Chairperson by 28 February 2003. Send to: Sheri Leavitt, NEC Chair, UTMB Galveston, 301 University, Galveston, TX 77555-0621; or fax them @ 409-772-8453.**

# Otter Enrichment and the Benefits of Keeper Involvement in Behavioral Research

By

Julie Ann Platt, Michael Brown-Palsgrove, Keepers  
and Stephen R. Ross, Behavioral Research Specialist  
Lincoln Park Zoo, Chicago, IL

## Introduction

As zookeepers we are constantly searching for ways to improve the care of animals in captivity. In addition to standard husbandry responsibilities, a keeper's duties can now include environmental enrichment, operant conditioning, and most recently, aspects of behavioral research. Because the management and operation of zoological facilities are often aided by scientific data obtained through behavioral observations, it becomes increasingly important for keepers to play a part in the scientific process. Decisions involving changes in exhibit design, changes in diet, and other husbandry modifications can be made based on information acquired from behavioral research. One relatively simple but important way for keepers to become involved with research at their zoo is by participating in a behavioral study.

An example of a successful keeper-driven behavioral study took place at the Regenstein Small Mammal-Reptile House at Lincoln Park Zoo (LPZ) in Chicago, IL. The primary focus of the study was how an enrichment intervention would affect a number of undesirable behavior patterns seen in our 1.1 Asian small-clawed otters (*Aonyx cinerea*.) This behavioral study was a collaboration that involved keepers, management and research staff. With the leadership and assistance of LPZ's behavioral research specialist, keepers were able to assist in many facets of the study, including ethogram development, data collection, and data analysis. This paper will demonstrate the importance of keeper involvement in behavioral studies at zoos, and show how this research can fit into the busy schedule of a keeper.

## Study Design and Methodology

There are some general principles that are used to guide the setup of a behavioral study. The first step in building a successful study is to identify an issue that warrants attention—a behavioral problem about which you would like more information. It is important to note that “when,” “where” and “how often” are valid questions to ask, but more complex issues involving the “hows” and “whys” are more difficult to accurately ascertain. Data from the study will need to be tabulated in order to statistically analyze the information. This is the only way to determine if the differences you are seeing are “significant” or not just a result of random fluctuations in behavior. An excellent resource for setting up a behavioral study is a chapter entitled “Data Collection in the Zoo Setting, Emphasizing Behavior” by Carolyn Crockett in the book *Wild Mammals in Captivity: Principles and Techniques* (1996).

The behavioral study that took place at LPZ involved our two full-sibling small-clawed otters that have lived together since birth (age 10 and 11). We observed our male otter, Sid, exhibiting several undesirable behaviors. We hypothesized that using an enrichment intervention would affect the frequency of these behaviors. We also wanted to find a way to encourage them to spend more time swimming, which is a natural behavior for otters.

The otters had varying access to three areas of their habitat: the exhibit, the den, and the holding area, totaling 210 square feet (19.5 sq. m). The exhibit also contained a large freshwater pool of approximately 1,900 gallons.

Data were collected between August 2000 and August 2001 by 13 trained observers including keeper staff and management. All observers were required to pass inter-observer reliability testing at a level of 85%. This testing helped to ensure that all observers were consistent in their data collection. Group scan sampling (Altmann, 1974) with a 30-second intersample interval was used during 15-minute sessions. We collected both behavior and location data. Observations were scheduled at random times between 0800 and 1800 with 3-6 observation sessions per day. A total of 313 hours of data were collected over the four, eight-week phases of the experiment listed below.

- Phase 1 was a baseline phase that examined the otters' behavior without any supplementary intervention. Standard management techniques that included regular training sessions and a variety of enrichment devices were maintained.
- Phase 2 introduced a type of feeding enrichment to the otters: An eight-inch hollow grapevine ball (available at most hobby stores) was stuffed with their regular meals before being tossed into the exhibit pool at two of their three normal feeding times. The third feeding was maintained as a training session. This enrichment did not alter the amount of food or the timing of the meals provided. Empty grapevine balls were then removed from the exhibit after feeding. We collected data for eight weeks and then again for another eight weeks six months after the grapevine balls were introduced. Often the effects of enrichment are "inflated" as patterns of use are influenced by the benefits of novelty. We were interested in studying the effect of the grapevine ball intervention long after these novelty effects had worn off.
- Phase 3 was a post-intervention phase in which feeding returned to baseline methods. Results from this phase would tell us if any beneficial effects of the intervention were carried over to times when the grapevine balls were no longer in use.

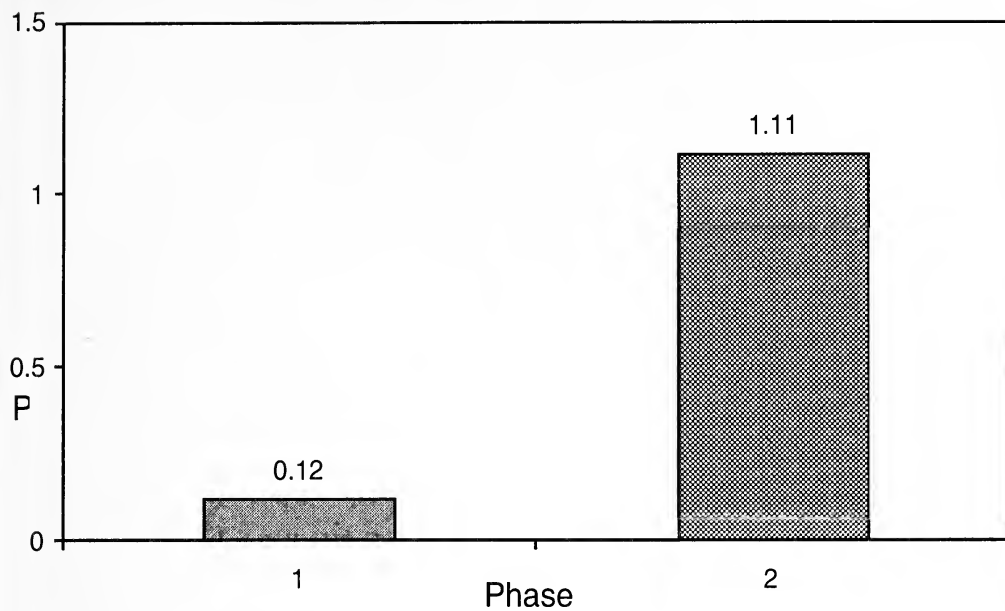
## Results

One of the focuses of the point-time sampling data was the location of the otters. Wild otters usually live in or around water, although less so for this particular species than others. During our initial development of the study we realized the otters did not make much use of the water portion of their habitat (0.12%). We wanted to see if the intervention would increase the amount of time they spent in the water. Graph 1 shows that the male otter used the water portion of his exhibit 1.11% of the time during the enrichment phase, an increase of almost tenfold.

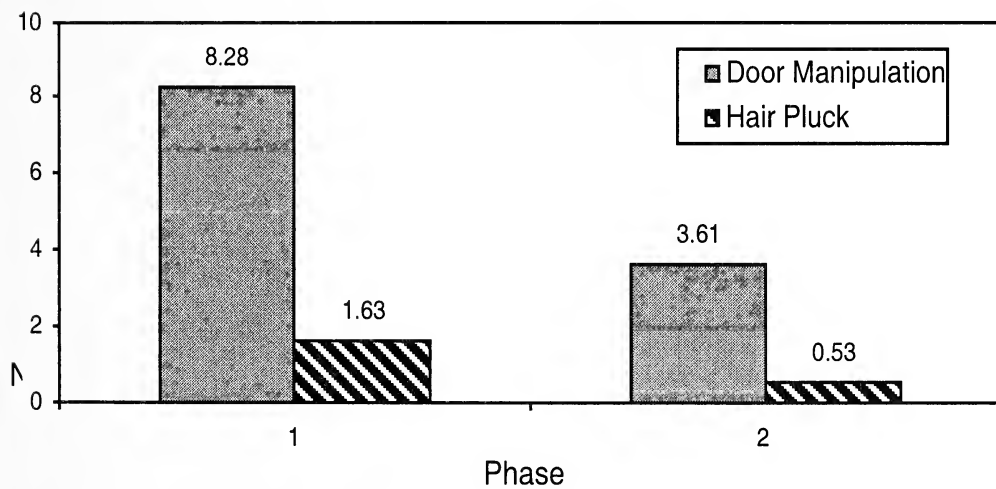
Two behaviors that we identified as "undesirable" were hair plucking and door manipulation. It seemed that the door manipulation was a begging behavior in response to the presence of a keeper. The hair plucking occurred primarily after feeding sessions and was resulting in a patchy coat quality. We hoped that by increasing a natural foraging behavior by feeding from grapevine balls in the pool that the frequency of undesirable behaviors would decline. Graph 2 shows the number of times per hour that the male otter manipulated the door or plucked hair from his body. Both behaviors showed considerable decline when the grapevine ball intervention was introduced. Keep in mind that these decreased rates are occurring despite the fact that this intervention has been in use for at least six months, so novelty effects are minimized.

This behavioral study showed that using enrichment devices with our two small-clawed otters seemed to encourage more natural behaviors. As the amount of time they spent in the water increased, the rate of undesirable behaviors decreased.

## Water Usage



## Undesirable Behaviors



## Conclusions

The data from this study demonstrated the behavioral benefits of this type of enrichment. While this might seem obvious to many keepers, the ability to have solid, objective data to back up the anecdotal claims of enrichment use and effectiveness is an important factor. The involvement of keepers in behavioral research facilitates open communication about the well being of the animals and provides valuable information that can be used to make management decisions.

The data collectors on the "otter team" were very happy to see positive results. Every collector was an essential part of the team though not everyone was involved for the entire study. All of the observers were consistent in the data collection so it did not matter that some collectors left during the study and others joined in the middle of the study. If your study requires multiple data collectors, try recruiting fellow keepers and managers to help with the research. The more data collectors who participate, means less time that any one individual has to devote to the study. As long as inter-observer reliability is kept, the data collection team can be as large as it needs to be. For example, our study was accomplished with minimal time devoted to data collection by any one individual: each observer only collected data for 15 minutes three to five times per week.

Ultimately this behavioral study was a success. It helped to answer our initial research questions, was an excellent learning exercise, and the otters benefited. For many of the collectors it was their first exposure to behavioral research. The keepers were involved in the whole process, from development through data analysis. We learned what a powerful tool a behavioral study can be for zookeepers to improve the care that we provide. We also wanted to share this information with fellow keepers in order to demonstrate the value of conducting behavioral research. We hope that reading about this successful keeper-driven study will inspire you to conduct a successful behavioral study at your institution.

Thanks to Lincoln Park Zoo, John Gramieri, Diane Mulkerin, and all the data collectors for their support of keeper research. A special thanks to the otters, Sid and Sal, for being such excellent research subjects.

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## New Twist on Conservation -

*from the "reading it but not quite believing it " category*

"Wyoming conservationists" have been given permission by the Central African Republic to "raise an anti-poaching militia to patrol the eastern fourth of the Texas-sized country," reports *National Geographic Adventure* magazine. The struggling government is unable to stop "well-armed" bands of Sudanese poachers often numbering in the hundreds from ravaging the "last large piece of pristine savanna in Africa." Populations of elephants, giraffes, crocodiles and lions have been reduced by more than 95% in the area," and the "conservationists have been given shoot-on sight authority."

*Source: GREENlines Issue #1720 10-7-02*



# Legislative Update

Compiled by Georgann Johnston  
Legislative Advisor  
Sacramento, CA



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## USFWS Adds Seven New Hunting and Fishing Programs on National Wildlife Refuges

The U.S. Fish and Wildlife Service will open new hunting and fishing programs on seven national wildlife refuges in Louisiana, Montana, Wisconsin and Virginia as part of its annual Refuge-Specific Hunting and Sport Fishing Regulations. The Service will also increase opportunities for hunting and fishing at eight refuges, bringing to 311 the total number of public hunting programs on national wildlife refuges. The Service also offers 271 public fishing programs on its more than 530 national wildlife refuges.

"I am pleased to announce these newest opportunities for America's hunters and anglers to enjoy their favorite pastimes on refuges," said Service Director Steve Williams. "Since 1903, America's national wildlife refuges have been special places for people to hunt or fish, watch and photograph wildlife, or simply enjoy the great outdoors. I am committed to expanding these activities wherever they are compatible with the refuge system's wildlife conservation mission."

The Service is adding the following refuges to the list of areas open for hunting and/or fishing: Bayou Teche and Cat Island refuges in Louisiana; Lost Trail NWR in Montana; Occoquan Bay, Rappahannock River Valley and Wallops Island refuges in Virginia; and Whittlesey Creek NWR in Wisconsin. In addition, the Service will increase recreational hunting and fishing opportunities on eight refuges in Georgia, Kansas, Louisiana, Minnesota, New Mexico, Oklahoma and Texas, and will make minor administrative changes to the general regulations governing hunting and fishing on refuges.

The USFWS proposes the following new or modified recreational hunting and fishing programs:

- Migratory game bird hunting on seven refuges, including: Bayou Teche NWR, Louisiana Black Bayou Lake NWR, Louisiana Cat Island NWR, Louisiana, Catahoula NWR, Louisiana Marais des Cygnes NWR, Kansas Trinity River NWR, Texas, Whittlesey Creek NWR, Wisconsin Upland game hunting on five refuges, including: Bayou Teche NWR, Louisiana Black Bayou Lake NWR, Louisiana Cat Island NWR, Louisiana Lost Trail NWR, Montana Okefenokee NWR, Georgia.

- Additionally, big game hunting on eight refuges is planned, including: Bayou Teche NWR, Louisiana Black Bayou Lake NWR, Louisiana Cat Island NWR, Louisiana Lost Trail NWR, Montana Occoquan Bay NWR, Virginia Rappahannock River Valley NWR, Virginia Wallops Island NWR. In 2001, there were two million hunting visits to national wildlife refuges and six million fishing visits. By law, hunting and fishing are two of the six primary wildlife-dependent recreational uses on national wildlife refuges, and individual refuges are encouraged to provide opportunities to hunt and fish whenever they are compatible with the refuge's conservation purposes. The Service annually reviews hunting and fishing programs on national wildlife refuges to determine whether to add, modify or remove them.

The National Wildlife Refuge System will celebrate its centennial anniversary on March 14, 2003. President Theodore Roosevelt established the first national wildlife refuge in 1903 when he ordered that Pelican Island, a small shell- and mangrove-covered island in Florida's Indian River, be forever protected as a "preserve and breeding ground for native birds." Nearly a century later, the refuge system has grown to nearly 95 million acres and includes nearly 540 refuges at least one in every state and more than 3,000 waterfowl production areas. There is at least one national wildlife refuge within an hour's drive of most major cities.

The full text of the Refuge-Specific Hunting and Sport Fishing Regulations can be found on the Internet at <http://refuges.fws.gov>. Source: USFWS Press Release 16 September 2002

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## **USFWS Awards Grants to Help States with Endangered Species Management**

The U.S. Fish and Wildlife Service recently awarded \$68 million in grants to 16 states and a Pacific island commonwealth to support conservation planning and acquisition of vital habitat for threatened and endangered fish and wildlife species. The grants will benefit species ranging from Red-cockaded Woodpeckers in Georgia to the Mariana Crow in the Commonwealth of the Northern Mariana Islands.

Funded through the Service's Habitat Conservation Planning Assistance and Land Acquisition grant programs, the grants will support up to 75% of the cost of 24 habitat conservation planning activities and 15 land acquisitions. The habitat conservation planning projects are located in AL, AZ, CA, CO, GA, HI, IN, NM, NV, OR, TX, WV, WA, and the Commonwealth of the Northern Mariana Islands. The land acquisition projects are located in CA, GA, IN, MD, MT, TX, UT, and WA. Non-Federal partners are contributing at least 25% of the cost of each project.

"By supporting local planning and habitat protection efforts, these grant programs help states and local governments provide for continued economic development while conserving threatened and endangered species," said Steve Williams, Director of the U.S. Fish and Wildlife Service. "These HCP grant programs exemplify Secretary of the Interior Gale Norton's commitment toward stronger partnerships with States, local communities, and landowners in a common goal of stewardship."

The two programs were established to help reduce the conflicts between the conservation of threatened and endangered species and land development and use. Under the Habitat Conservation Plan Land Acquisition Program, the Service provides grants to States or Territories for land acquisitions associated with approved Habitat Conservation Plans. The Habitat Conservation Planning Assistance Program provides grants to States and Territories to support the development of Habitat Conservation Plans, through support of baseline surveys and inventories, document preparation, outreach, and similar planning activities.

A Habitat Conservation Plan is an agreement between a landowner and the Service that allows the landowner to incidentally take a threatened or endangered species in the course of otherwise lawful activities when the landowner agrees to conservation measures to minimize and mitigate the impact of the taking. A Habitat Conservation Plan may be developed by a county or state to cover certain activities of all landowners within their jurisdiction and may address multiple species. There are more than 330 Habitat Conservation Plans currently in effect covering approximately 30 million acres, and some 320 more are being developed.

Habitat Conservation Planning Assistance Grants by State are:

**Alabama:** (Baldwin County, AL) \$101,750. This grant will help support Baldwin County's plan to incorporate single lot owners into a habitat conservation effort for the endangered Alabama beach mouse as well as three federally-listed species of sea turtles on Fort Morgan peninsula. All of the range-wide habitat for the Alabama beach mouse is on this peninsula. The planning area also includes nesting beaches important for maintaining northern Gulf of Mexico populations of loggerhead, green, and Kemp's Ridley sea turtles.

**Arizona:** Town of Marana Habitat Conservation Plan (Pima County, AZ) \$241,825. The HCP will cover approximately 40,000 acres and two ecosystem types: desert scrub and riparian. Restoration will be needed, in particular, for riparian habitat which maintains an isolated population of the cactus ferruginous pygmy-owl. Altar Valley Habitat Conservation Plan (Pima County, AZ) \$79,500. This grant will help fund the restoration of the Altar Wash, a 40-mile long drainage. This 700,000-acre HCP is in an important ranch land area and will help to protect the largest unfragmented landscape in eastern Pima County. It will benefit five listed and sensitive species, including the federally endangered cactus ferruginous pygmy-owl and Pima pineapple cactus and their habitats. It will also help improve watershed conditions, restore natural fire regimes, institute environmentally sound live stock practices, and create species recovery opportunities.

**California:** San Bruno Mountain Habitat Conservation Plan (San Mateo County, CA) \$100,000. This grant will support the amendment of the country's first HCP developed in 1983. The amendment will incorporate new information regarding several butterflies not covered by the original permit, as

well as the survival of narrow endemic species such as the Callippe silverspot butterfly found only on San Bruno Mountain. This HCP benefits several listed butterfly species, including the Mission blue, San Bruno elfin, Bay Checkerspot, and their habitats. The HCP will be amended to address changes to the status of covered species, new scientific information on the covered species, and changes in federal statutes, regulations, and policy governing HCPs since 1983. San Luis Obispo County (Estero Area Plan) Habitat Conservation Plan /Natural Communities Conservation Plan (San Luis Obispo County, CA) \$100,000. This grant will help initiate the development of an HCP which will cover 43,500 acres in the Estero area, the central coastal part of the county. It is expected that, in the next ten years, San Luis Obispo will be California's fastest growing county. Development of an HCP in this area will provide for a conservation strategy for covered species to address recovery needs and to allow for more flexible planning and implementation. This HCP will benefit the Morro shoulderband snail, Morro manzanita, Chorro Creek bog thistle, Indian Knob mountain balm, Morro Bay kangaroo rat, California sea-blite, California red-legged frog, steelhead, western snowy plover, and tidewater goby. Mendocino Redwoods Company Habitat Conservation Plan (Mendocino and Sonoma Counties, CA) \$60,000. This grant will support efforts to conduct distribution surveys and identify conservation measures for sensitive amphibian species on 230,000 acres of private commercial forest lands. These species may be listed in the future under federal or state endangered species acts. Also, the HCP will cover 19 listed species and provide major benefits for three listed species (northern spotted owl, Coho salmon, and marbled murrelet) by including essential habitat and eliminating major threats. The project encompasses the northern extent of the range of the California red-legged frog, and is the first HCP for private forest lands in California.

Yolo County Habitat Conservation Plan/Natural Communities Conservation Plan (Yolo County, CA) \$395,000. This grant will assist in finalizing a county-wide HCP/NCCP Program that is expected to result in the protection of habitat valued at more than \$39 million. Seven listed species will benefit including the federally threatened giant garter snake and valley elderberry longhorn beetle, and the federally endangered palmate-bracted bird's beak, a plant. Kern Valley Floor (Kern County, CA) \$100,000. Kern County is in the later stages of developing a significant multi-species HCP for a 3,110-square-mile area of California's southern San Joaquin Valley. \$100,000 will be used for public outreach, GIS development, environmental review, and development of an implementation process. Twelve listed species will benefit through a combination of mitigation (including acquisition of habitat, credit for conserving natural lands and plant species) and provisions for industry-specific conservation programs. Some of the listed species include the federally endangered California jewelflower, Kern mallow, Bakersfield cactus, Buena Vista Lake shrew and Tipton kangaroo rat. Contra Costa County Habitat Conservation Plan/Natural Communities Conservation Plan (East Contra Costa County, CA) \$160,000. The grant area will cover up to 288-square-mile planning area and will reduce impacts to federally and state-listed species including the large-flowered fiddleneck, Contra Costa goldfields, Longhorn fairy shrimp, California red-legged frog, Alameda whipsnake and San Joaquin kit fox. Placer County Habitat Conservation Plan/Natural Communities Conservation Plan (Placer County, CA) \$240,000. Numerous listed species will benefit from the development of this HCP including the vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, chinook salmon, steelhead, valley elderberry longhorn beetle, giant garter snake, and California red-legged frog. Shasta Plains Habitat Conservation Plan/Natural Communities Conservation Plan (Shasta County, CA) \$170,000. This grant will help fund the development of a 250-square-mile Conservation Plan during FY 2003-2004. Species that will benefit include slender orcutt grass, Greene's tuctoria, vernal pool fairy shrimp, valley elderberry longhorn beetle, vernal pool tadpole shrimp, California red-legged frog, Central Valley steelhead, Central Valley spring-run chinook salmon, Central Valley winter-run chinook salmon, and bald eagle. Zayante Sandhills Regional Habitat Conservation Plan (Santa Cruz County, CA) \$100,000. This grant supports an HCP that will identify and conserve the remaining core areas of sandhills habitat and appropriate buffers, while also providing a streamlined permitting process for small landowners. The funds will be used to identify and organize a Technical Oversight Committee, contract a Biotic Consultant Team and Outreach Coordinator, collate and map known data on resources, identify information gaps in data, conduct surveys, prioritize sites, write the conservation strategy, provide updates to local government, and conduct outreach. Species that will benefit include the federally endangered Mount Hermon June beetle, Zayante band-winged grasshopper, Ben Lomond spineflower, and Ben Lomond wallflower which are endemic to the Sandhills.

**Colorado:** Colorado Department of Natural Resources' Preble's Meadow Jumping Mouse HCPs (Boulder and Douglas County, CO) \$700,000. This grant will support the completion of regional HCPs for the threatened Preble's meadow jumping mouse. Completion of these HCPs will result in the collaborative conservation of nearly 500 stream miles and over 30,000 acres of riparian habitat.

**Delaware:** Developing a Comprehensive HCP for Sussex County, Delaware (Sussex County, DE) \$202,500. This grant will help fund the development of an HCP for Sussex County, Delaware, that will focus on impacts from development, highway construction, and timber harvest on forest habitat for federally listed species, particularly the endangered Delmarva fox squirrel and threatened bald eagle.

**Georgia:** Development of an HCP for Imperiled Aquatic Species of the Etowah River Basin (Northwest GA) \$281,934. This grant will help support the continued development of an HCP to cover all of the imperiled aquatic species of the Etowah basin, including 91 native fish species and numerous species of mussels. Of these, two fish species are federally endangered (amber darter and Etowah darter), one is a federally threatened fish species (Cherokee darter), and five are federally protected mussel species.

**Hawaii:** Development of a Habitat Conservation Plan for Game Mammal Management (North Kona, HI) \$346,583. This grant will help fund the second year of data collection and HCP development, including baseline surveys of listed plants and animals, monitoring of selected listed plants and game mammals to quantify impacts, and development of management and restoration actions to mitigate game mammal impacts to listed species. This HCP will cover two State game management areas encompassing approximately 80,000 acres, ten listed birds and animals, 31 endangered plants, and 14 species of concern.

**Indiana:** HCP for the Indiana Bat on Indiana State Forest Lands (State-wide, IN) \$587,250. This grant will help support the development of an Indiana Bat HCP covering all of the Indiana State Forest system containing about 150,000 acres in ten management units. Many of these forests contain caves in which a large proportion of endangered Indiana bats hibernate. These caves are considered essential to the continued survival of the species.

**Island of Rota, Commonwealth of the Northern Mariana Islands:** Mariana Crow Habitat Conservation Planning Assistance (Island of Rota, Commonwealth of the Northern Mariana Islands) \$243,904. This grant will help support efforts to meet the habitat needs of the Mariana Crow in the Island's agricultural homestead program. The endangered Mariana crow's recovery is dependent on stabilizing and recovering the Rota population. The goal of the HCP will be the release of public lands for agricultural homestead development, while protecting secondary limestone forests to support a stable population of crows to achieve recovery of the species.

**Multi-State:** Development of a Multi-Species Habitat Conservation Plan for the Malpai Borderlands Region (Malpai Borderlands, AZ and NM) \$92,000. This grant will help fund the creation of a watershed-scale plan for 800,000 acres that will provide the framework for cooperation among participating organizations, agencies, and landowners to guide restoration and management activities for listed and sensitive species in grassland, oak woodland, and riparian habitats of the Malpai Borderlands region. This HCP will provide benefits to over ten listed species that occur in the Malpai area, including the aplomado falcon, Mexican spotted owl, Yaqui chub, and Yaqui catfish.

**Nevada:** Southeastern Lincoln County Multi-species Habitat Conservation Plan and Meadow Valley Wash Ecological Resource Inventory (Lincoln and Clark Counties, NV) \$265,000. This grant will support the completion of the Southeastern Lincoln County Multi-species HCP and the public outreach and baseline survey and inventory tasks for the related Meadow Valley Conservation Management Plan. The Plan Area includes extensive Mojave Desert scrub habitat occupied by the federally threatened desert tortoise. Overall, the Lincoln County MSHCP will benefit 22 species, including four reptile species, nine bird species (including the endangered southwestern willow flycatcher and Yuma clapper rail), one amphibian, five fishes (including the endangered Virgin River chub and woundfin), and three plants.

**Oregon:** Sandy River Basin Habitat Conservation Planning - A Habitat Conservation Plan for the Bull Run Water System (Clackamas and Multnomah Counties, OR) \$459,224. This grant will help assist the Portland Water Bureau, in cooperation with the Oregon Department of Fish and Wildlife, in preparing an HCP for the Bull Run water system. Listed and proposed species to benefit from this project include coastal cutthroat trout, chinook salmon, and steelhead. Additional species that may benefit include bull trout, coho salmon, chum salmon, rainbow trout, pacific lamprey, river lamprey, Cascade torrent salamander, Cope's giant salamander, and the clouded salamander.

**Texas:** Edwards Aquifer Authority Habitat Conservation Plan (South-Central TX) \$328,000. This grant will support the 16,811-square-mile HCP which is unique because it addresses an exceptionally important aquifer underlying 17 counties in arid south-central Texas, and will greatly benefit eight listed species - seven of which have 100% of their range covered under this HCP. There are seven endangered species (Texas blind salamander, fountain darter, San Marcos gambusia, Texas wild-rice, Comal Springs dryopid beetle, Peck's cave amphipod), and one threatened species, the San Marcos salamander.

**Washington:** Washington Forests and Fish Habitat Conservation Plan (statewide) \$1,066,505. This Habitat Conservation Planning Assistance grant to the Washington Department of Natural Resources will be used to help launch the development of a state-wide HCP affecting aquatic and riparian protection on up to 10.3 million acres of non-federal land in Washington. The HCP will cover 63 fish and wildlife species, including 30 listed as state or federal endangered, threatened, sensitive, candidate or species of concern, including six salmon species, bull trout, and six stream-breeding amphibians. This HCP will also complement the Northwest Forest Plan on federal lands in the range of the northern spotted owl.

**West Virginia:** Blackwater Canyon HCP - Allegheny Wood Products (Tucker County, WV) \$229,025. This grant will help establish baseline conditions and begin the development of an HCP for the Allegheny Wood Product's landholding in Blackwater Canyon within the Monongahela National Forest. The HCP will benefit the threatened Cheat Mountain salamander and the endangered West Virginia northern flying squirrel, and includes important habitat for two federally listed bats, the Virginia big-eared bat, and the Indiana bat, while facilitating reasonable use of this private property.

Habitat Conservation Planning Land Acquisition Grants by State are:

**California:** San Diego County Core (Fieldstone) Area Habitat Conservation Plan Land Acquisition (San Diego County, CA) \$2,000,000. This grant will be used to help acquire 32 acres of significant habitat for coastal sage scrub species, including the federally threatened coastal California gnatcatcher. San Diego, MSCP County Sub-area, Proctor Valley Habitat Conservation Plan Land Acquisition (San Diego County, CA) \$10,000,000. This grant will help fund the acquisition of 824 acres of significant habitat to benefit the federally threatened coastal California gnatcatcher, and federally endangered Quino checkerspot butterfly and San Diego fairy shrimp as well as portions of landscape corridors used by large mammals. Riverside North Peak and Potrero Canyon Habitat Conservation Plan Land Acquisition (Riverside County, CA) \$9,000,000. This grant will support the acquisition of approximately 3310 acres of coastal sage scrub, including some of the best remaining contiguous blocks of Riversidean sage scrub in Western Riverside County. The area currently supports approximately 47 pairs of the federally threatened coastal California gnatcatcher, has riparian habitat that supports the federally endangered least Bell's vireo, and contains approximately 179 acres of habitat for the federally endangered Stephens' kangaroo rat. San Diego, MSCP City Sub-area, Denner Canyon and East Elliot Habitat Conservation Plan Land Acquisition (San Diego County, CA) \$1,720,000. This grant will help fund the acquisition of approximately 82 acres of key habitat for listed species. The East Elliot area supports numerous covered species including the federally endangered willow monardella and least Bell's vireo and the federally threatened San Diego thornmint and coastal California gnatcatcher. The Denner Canyon parcels provide a key wildlife corridor in the Multiple Species Conservation Program (MSCP), and support many sensitive species such as the cactus wren, and federally threatened coastal California gnatcatcher and Otay tarplant. Acquisition of these parcels will also protect vernal pool habitat known to support six listed species, including the San Diego and Riverside fairy shrimps.

**Georgia:** Red-cockaded Woodpecker Habitat Conservation Plan Land Acquisition - Moody Forest Natural Area (Appling County, GA) \$1,093,000. This grant will support the purchase of approximately 1,248 acres that will provide additional habitat, strengthen the value of existing habitat, and ensure the long-term viability of the federally endangered red-cockaded woodpecker population occurring in Moody Forest. Additionally, acquisition of these parcels will conserve other rare species present on Moody Forest, including nesting bald eagles, indigo snakes, gopher tortoises, and Bachman's sparrows.

**Indiana:** Least Tern Habitat Conservation Plan Land Acquisition (Gibson County, IN) \$850,000. This grant will help fund the acquisition of 840 acres of land for a federally endangered interior least tern colony, one of only two known east of the Mississippi River. This colony has grown from a single pair to 41 nests this year. The addition of this parcel would supplement the HCP by providing secure nesting habitat on 26 islands throughout the site.

**Maryland:** Habitat Protection to Support the Delmarva Fox Squirrel Populations at the Offsite Mitigation Area for the Home Port HCP (Queen Anne's County, MD) \$1,012,450. This grant will provide funds for the purchase of 266 acres to benefit the federally endangered Delmarva fox squirrel. Protection of the mature hardwood forests, unique to this population of Delmarva fox squirrel, will reduce further forest fragmentation and enhance connectivity between forest tracts.

**Montana:** Plum Creek Native Fish Habitat Conservation Plan (Flathead and Lincoln Counties, MT) \$4,286,331. This grant will go towards the purchase of two parcels of land totaling up to 47,000 acres. The purchase of these properties will prevent development on these high quality native fish (westslope cutthroat trout and federally listed bull trout) and wildlife (federally listed grizzly bear, gray wolf, bald eagle, and Canada lynx) habitats in the last remaining undeveloped river valleys of northwest Montana. A conservation easement will be placed on up to 46,808 acres of high value Plum Creek lands in the Thompson River valley.

**Texas:** Balcones Canyonlands Conservation Plan Land Acquisition (Travis County, TX) \$10,000,000. This grant will be used for the acquisition of up to 799 acres of high quality habitat characterized by steep canyons with bands of oak/juniper woodland that benefits the federally endangered golden-cheeked warbler, uplands that serve as potential habitat for the federally endangered black-capped vireo, and cave clusters for karst species. Six of the eight listed species covered by the HCP are karst invertebrates. City of Austin/Barton Springs Pool Habitat Conservation Plan Land Acquisition (Travis County, TX) \$1,044,550. This grant will help fund the acquisition of up to 5,685-acres that sit on the recharge zone of the Barton Springs, home of the federally endangered Barton Springs salamander. Acquisition of this property may also benefit federally endangered golden-cheeked warblers occurring on the property.

**Utah:** Washington County Habitat Conservation Plan Desert Tortoise Reserve (Washington County, UT) \$8,720,100. This grant will be used for the acquisition of up to 1,631 acres of essential habitat for the federally threatened desert tortoise. The acquisition and public management of these lands within the HCP preserve area will assist in preserving and enhancing habitat for the tortoise by providing a continuous habitat corridor for tortoises from Padre and Snow Canyons to Paradise Canyon and Highway 18 on the east, preventing future fragmentation of habitat.

**Washington:** Yakima River Wildlife Corridor Land Acquisition (Kittitas County) \$3,297,569. This HCP Land Acquisition Grant, associated with the Plum Creek HCP, will help fund the purchase of more than 2,190 acres of fish and wildlife habitat that will provide major benefits for the federally listed northern spotted owl, Canada lynx, gray wolf, grizzly bear, bull trout, and bald eagle. The acquisition complements the Northwest Forest Plan and Snoqualmie Pass Adaptive Management Plan and allows for wildlife to move north and south at both high and low elevations along the Cascade Crest. The Cascades Conservation Partnership has already raised over \$2.4 million in private funds to match the public funds and Plum Creek Timber Company is donating \$50,000. Steamboat Land Acquisition (Jefferson and Clallam Counties) \$5,482,000. This HCP Land Acquisition Grant, associated with the Washington DNR HCP, will purchase 365 acres of old-growth forest, including a stand with the highest known nesting density of the threatened marbled murrelet. The acquisition will also benefit the threatened northern spotted owl by providing a link for owl movement between coastal lowlands and mid-elevation interior habitats. It will also improve access



to coastal feeding areas for marbled murrelets and benefit other non-listed species that use old-growth forest on the Olympic Peninsula. Methow Watershed - Phase II Land Acquisition (Okanogan County) \$1,800,000. This HCP Land Acquisition Grant, associated with the Washington DNR HCP, will help fund the purchase of 568 acres of land and five miles of river frontage and deciduous forest along the mainstem of the Methow River. The purchase will add to the Methow Watershed protection project, underway for nearly a decade, that has already secured more than 10,000 acres for conservation. The emphasis is to secure the most critical lowland riparian habitats and to provide a wildlife corridor connection with the surrounding public forest and wilderness. Nationally, the Methow is the only watershed where the northern spotted owl, bald eagle, grizzly bear, Canada lynx, bulltrout, and gray wolf, all federally listed species, occur together. The presence of large carnivores indicates that this ecosystem is still healthy, but these rare animals need large areas free from human disturbance. This acquisition will have significant benefits for federally listed spring chinook salmon and steelhead, migratory songbirds, and the state's largest migratory mule deer herd. *Source: USFWS Press Release 13 September 2002*

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### **Newcastle's Disease Appears Again in the Continental United States**

California and Texas poultry and game bird owners are urged to check their flocks of poultry, fowl and game birds for reported signs of illness after an outbreak of Exotic Newcastle's Disease confirmed on 1 Oct near Los Angeles, CA. While END poses no threat to human health, some strains of the virus can kill nearly 100 per cent of affected birds.

California's disease investigation was initiated in late September after nearly 200 game birds died on a premise near Los Angeles, said Dr. Max Coats, assistant deputy director for Animal Health Programs at the Texas Animal Health Commission (TAHC), the state's livestock health regulatory agency. The National Veterinary Services Laboratory (NVSL) in Ames, IA, has completed tests on samples collected from the birds and confirmed the Exotic Newcastle Disease (END) diagnosis. As of 3 October, six California premises are involved in the poultry disease situation, and infected flock are being depopulated to prevent spread of END. Fortunately, none of the affected premises are near commercial poultry operations, and regulatory veterinarians from California and the US Department of Agriculture (USDA) say there is no indication of additional infected farms.

Dr.Coats pointed out that a wide variety of pet and wild birds can carry END. He urged flock owners to check birds and report signs of illness to the TAHC at 1-800-550-8242. TAHC or USDA veterinarians can work with private practitioners at no charge to collect samples for testing. Signs to watch for include: birds that gasp and cough; birds that exhibit central nervous system disorders, such as circling, depression, paralysis, drooping wings, or dragging legs; birds that produce fewer eggs;- birds with greenish diarrhea; birds that develop swelling of tissues around the eyes and neck; unusually high death losses in the flock.

Dr. Coats said laboratory testing is needed to confirm a clinical diagnosis of the Newcastle Disease, as signs can also mimic those of other poultry diseases. In Texas, tests can be run by staff in the poultry diagnostic laboratories in Center and Gonzales. These are part of the Texas Veterinary Medical Diagnostic Laboratory system, headquartered in College Station.

Carrier birds can spread the virus through respiratory discharges or feces. Caretakers can also become mechanical carriers of the disease, as the virus can be picked up and carried on shoes and clothing, feed trucks, or equipment. In warm, humid weather, the virus can survive several weeks; in cold temperatures, it can remain alive indefinitely. Viral disinfectants, dry weather and sunlight kill the virus. This is a good time to step up biosecurity practices on farms and ranches. Routine measures should include disinfecting footwear prior to entering or leaving a poultry facility, wearing disposable coveralls, or at least putting on clean clothes prior to entering a poultry site, said Dicky Richardson, a TAHC animal health programs specialist who works with poultry disease.

Texas officials recommend that producers should consider disinfecting tires on vehicles, bagging dirty clothing prior to leaving a premise, and monitoring visitors, including feed providers, service personnel and poultry buyers to ensure they are following disinfecting procedures. Anyone in contact with backyard poultry or game bird flocks should shower and change their clothes before coming into contact with commercial poultry. Producers who visit a feed store, a neighbor's farm, coffee

shop, or grocery store should change their clothes and disinfect footwear before returning to their poultry houses.

If END is introduced into an area, it is critically important to address the outbreak immediately with depopulation of infected flocks, strict quarantines in affected areas and surveillance in neighboring areas said Dr. Coats. He said an outbreak in southern California in 1971 resulted in the depopulation of nearly 12 million birds on 1341 farms. That outbreak, which cost taxpayers \$56 million, took three years to eradicate, and disrupted poultry production and trade, and impacted prices of poultry products. By reporting signs of disease immediately, the effects of outbreaks can be minimized. According to the USDA, Exotic Newcastle disease is a contagious and fatal viral disease affecting all species of birds. Previously known as velogenic viscerotropic Newcastle disease (VVND), exotic Newcastle is probably one of the most infectious diseases of poultry in the world. Exotic Newcastle is so virulent that many birds die without showing any clinical signs. A death rate of almost 100% can occur in unvaccinated poultry flocks.

Exotic Newcastle can infect and cause death even in vaccinated poultry. An outbreak of exotic Newcastle today would affect the US poultry industry severely. In 1971, a major outbreak occurred in commercial poultry flocks in southern California. The disease threatened not only the California poultry industry but the entire US poultry and egg supply. In all, 1341 infected flocks were identified, and almost 12 million birds were destroyed. Eradication efforts cost taxpayers \$56 million, severely disrupted the operations of many producers, and increased the prices of poultry and poultry products to consumers. Exotic Newcastle has not infected commercial chicken flocks in the United States since that outbreak was eradicated in 1974. Source: APHIS website: <http://www.aphis.usda.gov/oa/pubs/fsend.html>

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### **Illegal Ivory Trade Flourishes**

Reports from the Elephant Trade Information system indicate that a lack of enforcement in several Asian and African countries is undermining the international ivory trade ban reports Environmental News Service. China, where demand for ivory has "dramatically increased," Nigeria, the Democratic Republic of Congo and Thailand were singled out as hubs of the illegal ivory trade. These markets have become "increasingly more active since 1996 and account for the greatest volume of ivory being seized throughout the world." The International Fund for Animal Welfare maintains that there is a "clear relation" between "elephant downlisting proposals approved by CITES Parties in 1997 and 2000" and the "increase in poaching of elephants and illegal trade in ivory." Source: *GREENlines Issue#1725 10-15-02*

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### **Condors Susceptible to West Nile Virus**

California's first confirmed case of West Nile virus, has conservationists worried that the mosquito-borne disease which has "downed an astonishing variety of birds" could pose a "potentially mortal threat to one of North America's most ancient endangered species: the California condor" reports the *S.F. Chronicle*. An "unexpectedly robust outbreak" has "ravaged" bird populations throughout the Midwest, and with the virus "100% fatal to some bird species," the recovery program biologists are concerned the "fragile" condors may be "particularly vulnerable." Black vultures and endangered sandhill cranes have already died from the virus, which is known to kill birds from over 110 species, and scientists are "contemplating vaccine protection for whooping cranes." Source: *GREENlines Issue# 1709 9-20-02*

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### **Marine Issues Emergent at CITES**

Conservationists are already "gearing up" for the November meeting of the Convention on International Trade in Endangered Species (CITES) which is to consider some 53 proposals on various species, including a controversial bid to reopen the ivory trade according to *Greenwire*. Trade in marine species is an emergent issue that is expected to "be at the forefront of this year's meeting" as delegates debate proposals on whales, sea turtles, freshwater turtles, seahorses and sharks. The World Wildlife Fund says that the focus on marine species indicates the international community is "finally seeing evidence of the decline of individual species as part of the broader degradation of the marine ecosystems." Source: *GREENlines Issue# 1712 9-25-02*



# “THE STATE OF THE GAME”

## Observations on Conservation of Large Mammals in Kenya

By

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Philadelphia, PA*

East Africa remains the ultimate travel experience for natural history tourists, large mammal conservation biologists and zookeepers. Together, Kenya and its neighbor Tanzania contain more large mammals (gazelle size or larger) than the rest of Africa combined. I have taken eight trips to Kenya: one as a researcher, two as a tourist and five as a tour escort. My first trip was in 1979 and I have traveled to Kenya three times in the past two years with my most recent safaris in February/March and June of 2002. Changes are happening with wildlife conservation in Kenya; some are negative and some positive. This article will address my observations and what I believe the future holds for Kenya's efforts to conserve one of the largest wildlife populations remaining on the planet.

I will begin with Nairobi National Park (Nairobi N.P.), located on the doorstep of one of the largest and most vibrant cities in Africa. The city of Nairobi's neighboring reserve has always fascinated me. Nowhere else on earth can any country claim a natural ecosystem complete with large predators literally a 20-minute drive from its major international airport or its national capital. With a bit of luck you can hire a taxi in either the Nairobi city center or Jomo Kenyatta Airport, enter the park, and not only see a diverse collection of large animals but have the chance to see a large predator. During my 19 trips to Africa the only successful large mammal kill I ever witnessed was from a taxi at the Nairobi N.P. Observation Point where I saw a full maned lion pull down and throttle a wildebeest in November 1989. I have always imagined the U.S. equivalent to that sighting would be spotting a mountain lion taking down an elk while driving on the Washington D. C. beltway. Nairobi N.P. remains an exceptional wildlife experience. I always prefer to start my Kenyan safaris for first-time visitors here since participants are assured of seeing most of the common East African safari creatures-baboon, vervet monkeys, impala, giraffe and zebra. Nairobi N.P. is also the best place (and probably the best protected) in the wild to see the black rhino. I have seen at least one in every visit I've made to the park and, on occasion, up to a half dozen during a single game drive. Other frequently observed animals include eland, African buffalo, hartebeest, waterbuck, bushbuck, both Grant and Thomson gazelle and Nile crocodile. Seeing predators, particularly lions, was once a fifty/fifty proposition but no longer.



**Nairobi National Park - male lion at buffalo kill, an increasingly rare sight.**

For years the migration routes for a large population of migrant herbivores- wildebeest, zebra, eland and African buffalo that used the park during central Kenya's dry season have slowly been constricted by settlement and agriculture. The park is fenced on three sides and the migrants moved in and out of this partially forested and well-watered conservation area (a small reserve of only 44 sq. miles/ 114 sq. km) to the unfenced seasonally dry open plains to the south (an area more than ten-times the size of the reserve). However, the park's migrants had always managed to find their way around the obstacles human development placed in their path and concentrated in the reserve when water sources on the surrounding plains dried up. The predators, particular lions, would have a plentiful supply of prey during the dry season and this temporary bounty allowed lionesses to successfully rear litters of cubs.

As a result of the migration, the park had one of the highest recorded predator densities in Africa. The migration, however, has not entered the park since the year 2000. The cause was not the final cutting of the game paths into the park, as many feared, but the building of a large water impoundment for livestock south of the reserve. The impoundment now provides a year-round water source so the migrant herbivores no longer have to leave the short grasses (which are ideal for avoiding predators) they prefer for the long grasslands of the park (excellent cover for predators). Meanwhile, because of the lack of grazing by the migrant herds, the grasses of the reserve grow longer and therefore become less palatable, less nutritious and more dangerous to the resident grazers (hartebeest, impala, waterbuck and Thomson and Grant gazelle) whose numbers are now dropping as well.

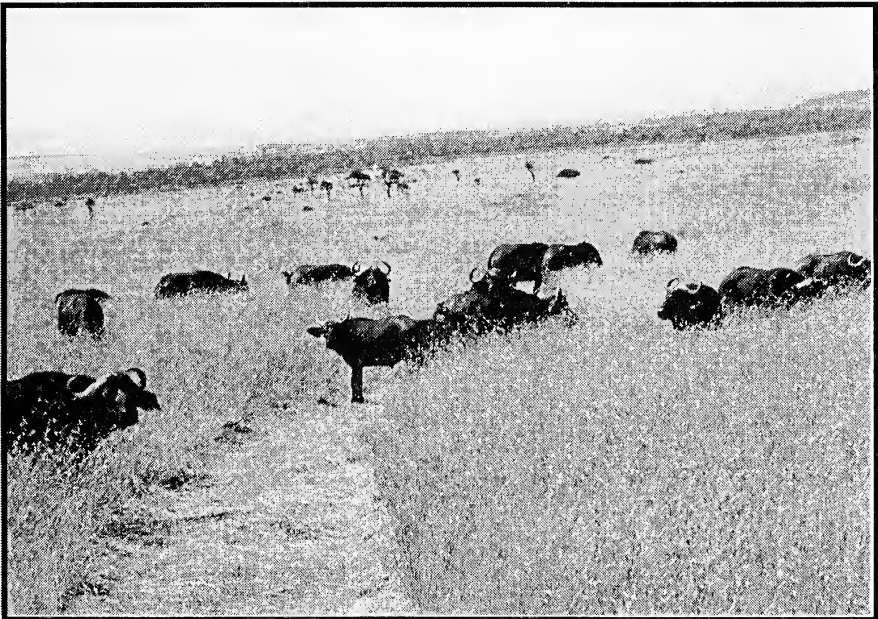
The lions have responded by leaving the park for the open grasslands to the south where they, unfortunately, often end up in conflict with local livestock herders and are shot or poisoned. Several conservationists have suggested that the Kenya Wildlife Service acknowledge the inevitable and totally fence the Nairobi Park, restock it with game, and intensely manage the area for the benefit of the great cats, thereby attracting more tourists to the reserve. Others hope to manipulate the park's ecology through controlled burning to enrich habitat for grazers and hopefully provide the same former bounty that supported the previous large number of predators. Whatever course is chosen, Nairobi N. P. will no longer be a naturally functioning ecosystem, a pity but, in my opinion, an unfortunate reality.

To see the future of Nairobi National Park (Nakuru N.P.) one need only look to its sister reserve, Nakuru National Park located a bit to the north in Kenya's Great Rift Valley. Once renowned for its diverse avifauna, particularly immense flocks of flamingos, Nakuru N.P. was also known as the best area in Kenya to see the elusive leopard. The reserve retains these exceptional features and has added others. The park, now expanded to cover over 100 square miles (259 sq. km), has been stocked with various species of game. Within the reserve's confines can be found large herds of African buffalo, eland, zebra, gazelles and Rothschild's giraffes that have joined the resident impala, waterbuck and reedbuck. White rhinos from South Africa were introduced in the early 90's and now number over 50. They now share the park with a smaller number of their black rhino relatives. A few reintroduced cheetahs, spotted hyenas and lions have joined Nakuru's resident leopards. The lions are very active and are frequently observed on a daily basis stalking the park's large herds of buffalo, making Nakuru N.P. among the leading places in Kenya to see the great cats' hunting behavior. This increase in predators has produced some subtle changes to the ecology of the reserve. The open shoreline of Lake Nakuru was once one of the best places in Africa to see the bohor reedbuck, but the increase in predators has lowered their numbers and forced them to heavy cover. This, incidentally, is the same habitat and behavior that the reedbuck uses in other predator-heavy regions of East Africa so the introduction of lions and cheetah seems to have restored a more natural balance.

All of this wildlife is located a mere ten-minute drive from the downtown of Kenya's fourth largest city- Nakuru. The reserve is now what Nairobi Park was 20 years ago with one exception - the entire boundary is fenced. I ask my tour groups whether the leopards, lions, buffalo and rhino they observe in Nakuru N.P. are less wild and therefore less meaningful to them since the entire reserve

is fenced. No, they tell me, they get the same thrill seeing the wildlife at Nakuru as they do on the open ranges of Samburu, Amboseli and Masai Mara. Even though Nakuru is fenced and managed, the lions still earn their food the hard way by taking down and killing large dangerous prey. Nakuru has become one of the most striking and visitor-friendly wildlife reserves in Africa. If such a diverse, scenic, well-managed, accessible and profitable reserve were found in any West African country (a region that is for the most part a conservation “basket case” for large mammal conservation) it would be considered both a national and world-wide treasure. In Kenya, Nakuru N. P. almost seems to get lost among a number of more remote and “wilder areas”.

One of these wilder areas, the Masai Mara National Reserve (Mara N. R.), is the best known of Kenya’s wildlife areas. The Mara may, in fact, be the most spectacular wildlife area in the world (at the moment) and in the opinion of some conservationists (myself included) the Reserve is at a crossroads. The Mara eco-system is actually two separate entities. The first is the Mara N. R. - an area of over 600 sq. miles (1554 sq. km); the other is the surrounding Group Ranches- an area that totals over 1,400 sq. miles (3626 sq. km). Even when the numbers of game from the renowned Serengeti migration are dropped from wildlife counts, this combined area holds the greatest number of large mammals in Kenya and one of the largest wildlife populations in Africa. Those who are familiar with the Mara eco-system know that more plains game (wildebeest, zebra and gazelle) can be seen outside the Mara N. R. than within its confines. When the Serengeti herds enter the Mara (usually during the months of July through September) more wildlife occurs within the reserve. The Mara N. R. has been set aside for eco-tourism while within the Group Ranches, the local Masai live and follow their traditional livestock (cattle, sheep, goats and donkeys) herding culture. This traditional pastoral lifestyle of burning grazing lands and the suppression of predators have created ideal conditions for plains game.



**African buffalo herd in Mara Triangle of the Masai Mara Game Reserve**

In theory payments from tourist visits to any area of the Mara region are split among the local Masai communities. These payments are considered compensation for not allowing development on Group Ranch lands. In reality, the payments that the Masai are entitled to barely equal what the local communities could get by renting their grazing lands for wheat and barley production. What complicates conservation in the Mara even further is that these tourist fees seldom reach the

communities intended for them. The Mara region is under the control of the Narok County Council, which has had a long history of corruption and of siphoning off payments intended for local Group Ranches. Thirty years ago the Group Ranches held much more wildlife than the reserve, however recent surveys have shown a decline that reaches 90% for some antelope species. This drop in wildlife appears to be the result of increased livestock numbers, some poaching and the conversion of areas to the north of the Group Ranches (a region once used for Masai Group Ranch seasonal grazing) to grain production. Much of this crop of wheat and barley is sold to Kenya Breweries (the makers of Tusker Beer) and their competition, South African Breweries, (the makers of Castle Lager).

Three of my last four safaris to the Mara were to the eastern section of the reserve. On both trips I observed Masai cattle herds grazing within Mara N. R boundaries. The first time I saw this was in June of 2000 when a devastating drought had gripped Kenya. Allowing grazing within the reserve is therefore understandable since the Mara's very existence is due to the permission of the local Masai. However, in February and again in March of 2002, a time of ample rain and plentiful grasslands outside the reserve, I again observed cattle herds being grazed within the boundaries of the reserve. I have heard reports that the local Masai are asking to have a section of the Mara be de-gazetted (including the area that I observed) and be returned to the local Group Ranches. This request has a precedent since in the 1980's a section of over 100 sq. miles (259 sq. km) was removed from the reserve. I am not sure how much of this sentiment is due to the lack of support (i.e. tourist dollars) from the Narok County Council but I suspect it may be significant. Within this area of the reserve predator numbers, particularly lions, are high. Each of the lion prides that my groups observed had numerous well-fed cubs. If this area is removed from the Mara N.R., the Masai, who are generally intolerant of lions and hyenas, will likely limit the numbers of both species of predators.

Overall I consider the western Mara the most spectacular wildlife area I have ever experienced. I first saw this area in December of 1989 while assisting in a research project. I recently reread my field notes from that first trip and I still marvel at the slides I took and the different species and numbers of the animals I saw (including observations of two that are now considered extinct in the Mara- African wild dogs and roan antelope). I visited the western Mara again in 1995 and while this was not as spectacular as my first trip there, it was still impressive. On my latest safari to the western Mara in June 2002, I was immediately struck by the lower numbers of game and the amount of development in the village of Rianta, located near the entrance of the renowned Mara River Camp. What were once a few ramshackle wooden buildings and adjacent Masai bomas is now a small developed settlement. The road that was difficult to drive in 1995 I am sad to relate is now an even worse bone-jarring ordeal. I can remember the managers of the Mara River Camp, where I stayed previously, bitterly complaining then how some of their rental payments to the Narok County Council were intended to improve the road to their facility.

The battered rutted road continues until it crosses the bridge over the Mara River when all of a sudden you enter the friendly confines of the "Mara Conservancy". Entering this area you immediately see recently graded roads and readily visible wildlife. The Conservancy (a private enterprise) has changed the status quo dramatically and now directly manages this 180 sq. mile (466 sq. km) section of the Reserve called the Mara Triangle. The Conservancy has improved the roads, financed and organized anti-poaching patrols and has turned over 60% of the tourist fees it collects directly back to the adjacent communities bordering the Triangle. As a result, the local Masai now support the Reserve and have even leased a small portion of their communal grazing as a tourist concession area for nearby Kichwa Tembo Camp. Kichwa Tembo is part of a South African tourist consortium that follows a policy of involving local communities in the operation of its lodges and conducts conservation projects in the vicinity. One can also take night game drives in the concession area, something that is not allowed in Kenyan National Parks and Reserves. Unlike the other areas of the Mara I have visited recently, the Conservancy's Mara Triangle program, only 18 months old, appears to be a tremendous conservation success.

Similar progress appears to be happening in the Amboseli region. Two visits that I made here in 1991 and 1992 resulted in a dearth of predator sightings. This was after a period when the local Masai, angered at a rash of attacks on their livestock, launched a poisoning campaign against local predators. I was told that only two lions, both old and post-reproductive, were residing in the Park. I saw and photographed these two old cats and saw one spotted hyena during my visits. I returned to Amboseli in June of 2000 and saw lions and hyenas every day. The change in predator numbers was dramatic and is due to a concentrated effort to involve the local Masai in the operation of Amboseli National Park. This, again, is due to tourist revenues being given directly to the neighboring Masai communities. They also receive compensation for livestock losses and have been encouraged to set aside private concession areas for camping or lodges. As with the Mara Conservancy, wildlife numbers, particularly predators, have increased. Similar to the western Mara, some areas of communal grazing lands have become local community game sanctuaries as well.

My last three safaris included stops at the Buffalo Springs and Shaba National Reserves in the Samburu region of northern Kenya. This area of Kenya was, until the last few years, under assault from Somali poachers and bandits and the numbers of both tourist visits and wildlife populations dropped dramatically as a result. On my recent trips elephant family groups were particularly abundant and approachable. So were reticulated giraffe, oryx, gerenuk, Grant gazelle, waterbuck, desert-warthog and both the common and Grevy zebra. I saw herds of African buffalo here for the first time on my March and June trips along with cheetah and lion. I believe that the sharing of tourist fees (local communities receive at least half of tourist fees paid to enter the reserves) along with increased security, have allowed wildlife numbers to improve. In the Shaba Reserve game remains sparse since anti-poaching teams have only recently begun patrols. My tour drivers insist the lack of game is due to the disturbances and demands made on Shaba during the filming of the TV series "Survivor Africa". That filming did, however, bring much needed income to this impoverished region of Kenya and attention to the little known and previously neglected Shaba Reserve.



**Buffalo Springs Reserve - Elephant numbers are increasing in this region of Kenya.**

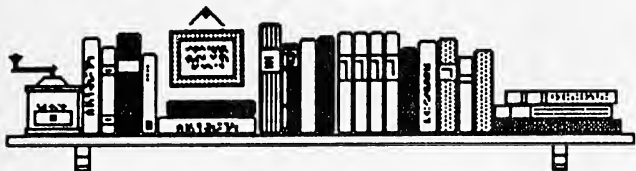
Another reason for the improvement in both the amount of wildlife and the security for tourists in this region of Kenya is the support and advice provided by the private game ranches located just to the south in the Laikipia region. Among the properties here are the Sweetwaters Ranch (which I got to visit for the first time this past spring) and the Lewa Conservancy (well known to AAZK members and "Bowling For Rhinos" supporters). The Laikipia region is the only area in Kenya where wildlife populations have actually increased in the past ten years. An elephant census has recently been completed and elephant numbers in Laikipia ranches and the Samburu/Buffalo Springs/Shaba Reserves have increased from 3,500 to over 5,000 in five years, an exceptional conservation success story. The same trends are holding for plains game and predators and Laikipia now has the most visible and perhaps the largest population of the greatly endangered African wild dog in Kenya. The Lewa Wildlife Conservancy has been a great part of this success. The Conservancy's emphasis on community education, with community security being essential to successful wildlife conservation, has provided an excellent model for regional conservation. By empowering local Kenyans with increased educational opportunities and training security teams that serve as a combination anti-poaching, anti-stock raiding and anti-bandit force, local people and wildlife have benefited.

In addition, last year elephants from Sweetwaters and Grevy zebras from Lewa were successfully reintroduced to Meru National Park, an area to the east that until recently experienced extraordinary poaching and neglect. Both white and black rhino (again animals drawn from breeding programs on the Laikipia Ranches) will shortly follow and if the current progress continues, Meru National Park will become one of Kenya's most spectacular wildlife reserves within the next ten years. The Lewa Conservancy believes that if security concerns in this region of Kenya continue to improve, the Laikipia Game Ranches could also provide wildlife to restock the rest of Northern Kenya. This region of Kenya will always be available for wildlife. The arid conditions make crop growing nearly impossible and the concentration of local cattle herders into settlements with schools and hospitals means that the region is slowly becoming depopulated. Managed with similar conservation programs now operating successfully in other regions of Kenya, this area, which comprises about one fifth of the country, could become a wildlife stronghold.

The entire AAZK organization, and particularly Andy Lodge (who first brought Lewa to the attention of AAZK), Patty Pearthree (who has kept "Bowling For Rhinos" going), the support of past and present AAZK boards and presidents, and the numerous AAZK Chapters of the organization, deserve our admiration for the long-term support of what I consider to be one of the most successful conservation programs in the world.

The long-term success of conservation in Kenya and the survival of its large mammal fauna are not assured. Kenya still has one of the highest birth rates in the Africa, although that rate declines year by year. Corruption within the country makes effective conservation and human aid programs costly and sometimes ineffective. The forests of the country are under heavy pressure. These forests are essential for watershed protection critical for agriculture (which not only feeds Kenya's people but also provides greatly needed export income) and the water sources for its conservation areas. What impressed me the most during my visits to Kenya is that the diversity and numbers of wildlife continues to hold on in spite of the odds against them. Kenya remains one of the few countries in Africa where wildlife is still commonly sighted outside National Parks and Reserves. Ultimately it will be Kenya's people who will decide the fate of its conservation programs and its fauna. However, successful community-based conservation projects now taking place adjacent to Amboseli National Park, the Mara Conservancy, the Samburu reserves, and particularly the Lewa Conservancy, give me a feeling of cautious optimism that Kenya's parks and reserves will contain ample visible wildlife for the foreseeable future.





# Book Review

## **Wild Health: How Animals Keep Themselves Well and What We Can Learn from Them**

By Cindy Engel, 2002

Houghton Mifflin Company, 215 Park Ave. South, New York, NY 10003

ISBN 0-618-07178-4

276 pages, \$24.00 list price

*Review by Jan Reed-Smith, Keeper,  
John Ball Zoological Garden, Grand Rapids, MI*

I found this book fascinating; the fundamental medicinal use of clay by so many species stands out as a highlight to me. I don't know why this particular fact so captured my attention, but it did. And, I guarantee if this news about clay doesn't stick to you, something else in this well-researched book will.

Dr. Engel essentially wrote *Wild Health* to make a point about human health – mankind can learn something about balancing our health from observing animals. This is probably true, interesting in, and of itself, but not why I recommend this book to my fellow professional wild animal caretakers. Instead, I would like to suggest that, in addition to being exposed to provocative concepts such as: self-medication by wild animals, the importance of plant secondary compounds, the role of hormesis (stimulation of growth, fecundity, longevity, and “*decreased disease incidence*” after exposure to small amounts of a toxin) and, the natural control of endo-, and ectoparasites via diet, we can all learn something about enriching our captive animals' environments. I found myself starting through the book a second time with an eye towards what can be incorporated into my animals' captive habitats and routines; I found myself asking questions like “What are we missing?”.

*Wild Health* is divided into the following chapters and subchapters: I. Living Wild: Health in the Wild; Nature's Pharmacy; Food, Medicine and Self-Medication; Information for Survival II. Health Hazards: Poisons; Microscopic Wounds and Broken Bones; Mites, Bites, and Itches; Reluctant Hosts, Unwelcome Guests; Getting High; Psychological Ills; Family Planning; Facing the Inevitable; What We Know So Far; III. Lessons We Might Learn: Animals in Our Care; Healthy Interventions.

As examples of some of the interesting facts included in this volume, Dr. Engle discusses the consumption of toxic tannins and saponins by mice and pikas: “*Tannins and saponins, for example, are harmful to mice when eaten in separate foodstuffs or when mixed in the wrong proportions, but if the mice are allowed to choose for themselves, they select a combination of the two that nullifies toxicity. In the right ratio, tannins and saponins bind together in the intestine, preventing their absorption into the blood.*” The North American pika stores, for the winter, a favorite species of plant high in phenols such as tannins but begins to eat it after the phenols have started to break down making the plant more palatable and safer to eat. Two different strategies for coping with toxic foodstuffs that are far more complex than anything I consciously or, unconsciously pursue.

I could go on listing interesting bits of information, new, at least to me but, you don't need to read a long book review, you need to read the book. I am not schooled in the subject matter, there may be claims made that are open to interpretation but the discussions that would ensue are ones from which we can all benefit.

### **A second look at this title...**

*Review by Art Goodrich, Retired Zoo Keeper  
San Diego Wild Animal Park, Escondido, CA*

This book is one I wish I had 30 years ago when I first started as a zoo keeper. It is the first book of a new and exciting field in Biology--Zoopharmacognosy. Putting that word aside, we can move on to the meat of the book. Cindy Engel has a Ph.D. in biology and has done research on animal health as well as holistic medicine uses for humans. The book covers a mixture of creatures from insects, reptiles, birds, mammals and primates: showing how they use their environment for food, medicine - both self medicating and preventive medicine. It shows how they naturally know what to use for such problems as poisons, hygiene, detox, depression, stress, hormone imbalances, skin problems, etc. You can use this book as a "keeper aid". You can look up your favorite animals and find out why they are doing certain behaviors and what you might do about it. You can find out what to provide them at certain times of the year--certain times of their life--certain times of their pregnancy, or even during the courtship. This book covers many diseases, many behaviors, as well as many nutritional needs of wild and zoo animals.

The author has used the knowledge of many of the great behaviorists of our time. She has also developed a reference library---chapter by chapter--for further study on the many facets of her information.

I highly recommend the book for any personal or society library. I am going to have to obtain another copy because I am going to wear this one out in no time. The insights gained from this information far outweigh the \$24.00 cost of the book. It is exciting to read about things you thought were there but couldn't quite put your finger on. You will be looking up your own animals as well as those of your fellow keepers. We, as zoo keepers, know that no one individual has all the answers and this book will be another tool in your arsenal of equipment for the care and well-being of the animals in your charge.

Did I mention---there is even a section on zoo animals to compare with the wild ones? Don't walk--run to get your copy--but do it on your day off, as you will want to read it right away.

## **MOVING?**

Please let us know when you change your address! It now costs AAZK 99 cents every time an *AKF* is returned because of an incorrect address. Call 1-800-242-4519 (U.S.) or 1-800-468-1966 (Canada) or e-mail [aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com) to report your new address.



## **Philadelphia Chapter AAZK**

Current officers for this Chapter are:

Co-Presidents....Mark Hayes and Beth Inemer  
Vice President....Dawn Madzarac  
Treasurer....Linda Cairnes  
Liaison....Chris Waldron

Our current membership is 18 Professionals and six Affiliates. We hold monthly general membership meetings and have some very active sub-committees including enrichment, conservation and education, and Bowling for Rhinos. We held our annual Bowling for Rhinos in August and raised over \$4000.00. This total continues to grow through the sale of T-shirts and other BFR merchandise.

Earlier this year we hosted Charlene Jendry, the co-founder of Partners in Conservation, a grassroots project initiated by the Columbus Zoo that works to support conservation efforts around the mountain gorillas, their habitat and the people/communities they live near. This group also supports conservation outreach programs in the U.S.

In addition to our normal Keeper Evening and Keeping Up with the Keeper events, we've been able to raise money through demonstration and raffle tables set up at various zoo events. These events included our annual employee party, our Zoobilee held in July, our Children's Zoo Razzle Dazzle event in September, and several week-long events held throughout the summer (Garden Days, Conservation Fest, World Culture Fair). At these events AAZK sets up tables discussing various conservation topics that our Chapter supports as well as some of the projects we've undertaken right inside the zoo (such as browse and herb gardening and recycling).

Other events have included our annual book sale and a variety of enrichment activities held during our Boo at the Zoo event last month. We made pinatas and carved pumpkins, gave keeper talks geared toward enrichment activities at the zoo, and developed some simple enrichment ideas that our guests could help create.

We've had another successful year to date and we're looking forward to our future activities.

—Chris Waldron, Chapter Liaison

# *Chapter News Notes*

## **Rocky Mountain AAZK Chapter**

The 2nd Annual Comedy Night and silent auction that was held in August was a huge success. We raised almost \$12,000.00 for our conservation projects including the Rhino Keeper Conference that we are hosting from 15-18 May 2003.

During the month of October the Chapter also sold T-shirts depicting elephant trunk prints and various animal footprints.

--Molly Maloy, Chapter Liaison

## **LAST CHANCE Have You Sent in Your Chapter Logo Update?**

A notice was sent to every Chapter requesting verification of the logo we currently have on file for their Chapter; or requesting submission of a newly adopted logo for inclusion in the 2003 edition of the AAZK Chapter Logo Registry. Chapters submitting new logos should send a clear, clean copy along with information on the designer and the date the logo was adopted. Logos may be sent on disk as JPEG or TIFF files. When mailing, **DO NOT** fold the logo. If you have not sent in your response, please do so ASAP. If, for whatever reason, you did not receive a logo request packet from AAZK/AKF, call Susan Chan at 1-800-242-4519 to request one. Chapters that do not respond will be represented by the most recent logo we have in our file for them in the upcoming Logo Registry.

**Deadline is 1 December 2002.**

Send to: Logo Registry, AAZK, 3601 SW 29th  
St., Ste. 133, Topeka, KS 66614-2054

*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 10th of each month to: Opportunity Knocks/AKF, 3601 SW 29th St., Suite 133, Topeka, KS 66614-2054. Please include closing date for positions available, and when setting these dates keep in mind that because of bulk-mail, most readers do not receive their AKF until the middle of the month or later. There is no charge for this service and fax or e-mail listings of positions which become available close to deadline are accepted. Our Fax is (785) 273-1980; e-mail: akfeditor@zk.kscoxmail.com< Listing may be sent as MS Word attachment. We are no longer located at the Topeka Zoo, so please note new address to avoid delays in processing.*

**Zoo Keeper/Health Center**...Duties include primary care, feeding and cleaning of animals housed in the Health Center, including animals in quarantine, under medical treatment or emergency care. Also responsible for the cleanliness and proper stocking of treatment rooms, wards, and necropsy room. Essential Functions: Prepare diets. Feed and clean all animals in the Health Center. Monitor behavior and health of animals in the Health Center. Prepare daily reports and department correspondence. Clean and sterilize instruments and prepare surgical packs. Operate department diagnostic equipment. Prepare medications and dispense as directed. Skills: Delicacy to handle, examine, and move without harming sick, injured, or struggling small (often neonatal) animals. Sufficient strength, agility and coordination to net, capture, and/or restrain animals of extreme size, strength and agility. Ability to lift heavy (60lb) objects from ground level, move approximately 10' and to perform this function at least five (5) times in succession without danger or injury. Operate light motor vehicles. Knowledge of animal nursing skills. Sufficient field of vision and audio acuity to be aware of animals or vehicles that may be approaching from the rear. Able to open, enter, exit and secure animal enclosures and service areas. Able to safely use common hand, power, and yard tools while working from the ground, on scaffold or on a ladder. Able to use personal computer using standard computer programs such as WordPerfect and MEDARKS. Qualifications - Ability to work weekends, holidays and occasionally after-hours assignments. Valid driver's license. Associate degree in wildlife management, zoology, biology, or related field preferred. One (1) year zookeeping experience. Strong desire to work with animals and working knowledge of animal behavior and animal husbandry based on experience and/or education. No phone calls, please. Qualified candidates may apply in person or by mail, everyday, 8am-5pm, San Antonio Zoo, Attn: Human Resources Dept., 3902 North St. Mary's St., San Antonio, TX 78212 or by Fax at (210) 734-7291.

**Animal Specialist (Mammals)**...Full-time position at Busch Gardens-Tampa. Responsibilities include hands-on program working with large carnivores; this includes leash walking, free leash work and other training practices; care and maintenance of a variety of animals including their displays, operant conditioning and enrichment of a variety of animals, tiger handling/animal presentations with guests or media as needed and daily record keeping. Heavy lifting is involved. Interested candidate must be at least 18 years of age with a mammal husbandry background and strong communication, public speaking and guest relation skills to include a desire to work with our Public Relations department and the media. A strong operant conditioning background is a must and three (3) years large carnivore experience is preferred. Candidates must also be SCUBA certified (please attach a copy of your SCUBA certification card to your resumé). Must also be team-oriented and be available to work a flexible schedule to include evenings, weekends and holidays. Must be able to obtain a valid Florida drivers license. Some travel may be required. If interested, please submit your resumé with copy of SCUBA certification, **no later than 30 November 2002**, to: John Mezzei, P.O. Box 9158, Tampa, FL 33674 or fax at (813) 987-5374. Busch Gardens is an Equal Opportunity Employer and we support a drug-free workplace.

**Head Zookeeper**...Columbian Park Zoo is currently seeking a dynamic, self-motivated individual for the position of Head Zookeeper. Duties will include supervising a small keeper staff and routinely providing direct animal care for a collection of approximately 120 animals. Assist with record keeping, demonstrate and coach peers in proper animal husbandry practices, facility maintenance and safety practices. Must possess excellent communication, interpersonal skills and must work well in a team-oriented environment. The zoo is currently embarking upon the implementation of a comprehensive master plan with construction beginning in later 2003. We invite the qualified candidate to join us in this exciting process. The city of LaFayette offers a competitive salary, full benefits, and an excellent working environment. Interested candidates may send a cover letter and resumé to: Human Resources, Lafayette City Hall, 20 N. 6th St., Lafayette, IN 47901. Please contact Human Resources at (765) 476-4477 or email hr@city.lafayette.in.us with any questions. **Position open until filled.**

**Avian Internship**...available at Fossil Rim Wildlife Center, a not for profit AZA-accredited organization in Glen Rose, TX. Avian Internships are offered in spring and run through summer. Interns will assist the Avian Supervisor with daily record keeping, cleaning and care of Attwater's Prairie Chickens and Japanese Red Crown Cranes. Responsibilities include, but are not limited to: visual observations, compiling data,

maintaining flights, diet preparation, assisting with incubation procedures and hand-rearing chicks for the annual release program. Opportunities include attending Attwater's Prairie Chicken Recovery team Meetings, a trip to Attwater's Prairie Chicken National Wildlife Refuge, Animal Care Staff lecture series and a field trip to a local zoo. At least two (2) years of college with wildlife management, conservation biology or a related scientific discipline preferred. Must be able to work weekends, holidays and in inclement weather. Familiarity with Word and Excel a plus along with general maintenance skills. On-site housing and stipend available. Applications will be accepted **until 13 December 2002**. For more information, visit [www.fossilrim.org](http://www.fossilrim.org) or contact Linda Gustafson at [animalcare@fossilrim.org](mailto:animalcare@fossilrim.org) or call (254) 897-2960 ext. 305; or write her at P.O. Box 2189, Glen Rose, TX 76043.

### **Internship Opportunities - National Aquarium in Baltimore**

To apply for any of the following internship positions go online at [www.aqua.org/education/internships](http://www.aqua.org/education/internships) to obtain an application form. A complete application includes contact information, answers to brief statements listed, and a copy of college transcript. Complete applications should be sent to: National Aquarium at Baltimore-Internships, Pier 3/501 East Pratt St., Baltimore, MD 21202. Application Deadline: ongoing - 1 April 2003 for Summer and Fall 2003 terms; 1 November 2003 for January and Spring terms of 2004. For further information contact the National Aquarium in Baltimore's Internship coordinator at [intern@aqua.org](mailto:intern@aqua.org) or call (410) 576-3888.

#### **Aquarist Intern**

The selected candidate will assist the Aquarium aquarist staff with daily care of the Aquarium's invertebrates and fish. *Essential Functions:* Assist with tank maintenance and cleaning; Prepare daily diets and perform daily feedings; Assist in the maintenance of back-up areas; Conduct precise record keeping; Perform special projects to be determined by the aquarist staff. **Requirements:** College juniors or seniors enrolled in an accredited college, pursuing a degree in Biology, Ecology, Environmental Science, or a related field. Must complete a minimum of 120 hours of work within the selected term, preferably during the week. Must be able to lift 50 lbs, climb up a 6' ladder, and be able to squeeze across a 15' long x 12" wide platform. Interns must receive college credit for their internship. Internships are unpaid.

#### **Aviculture Intern**

The selected candidate will assist the Aquarium aviculture staff with daily husbandry activities in the South American Rainforest exhibit. *Essential Functions:* Assist with and perform diet preparation and distribution; Conduct animal observations; Assist in the cleaning of holding areas, kitchen, and food prep areas; Provide enrichment to the aviculture collection; Perform special projects as determined by the aviculture staff. **Requirements:** Interest in working with birds. Enrolled in an accredited college, pursuing a degree in Biology, Zoology, Animal Behavior, Ecology, Environmental Science, or a related field. Must complete a minimum of 120 hours of work within the selected term. Interns must receive college credit for their internship. Internships are unpaid.

#### **Herpetology Intern**

Duties: Tend the "Hidden Life" exhibits (large wall terrariums where small, neotropical lizards, frogs, snakes and invertebrates are on public display); Mist and clean the off-exhibit colony of small arboreal lizards; Mist, clean and otherwise help tend the large, off-exhibit collection of neotropical frogs; Prepare diets for and feed the on and off-exhibit iguanas and tortoises; Tend the locust (live food) colony, orb-weaving spiders and colonies of non-venomous exotic arthropods (wood and hissing roaches, millipedes and walking sticks); Assist in the maintenance of the live food cultures (fruit flies, springtails, crickets, rats, mice); Conduct and record animal observations; Perform special projects as determined by the herpetology staff. **Requirements:** Enrolled in an accredited college, pursuing a degree in Biology, Zoology, Animal Behavior, Ecology, Environmental Science or a related field. Must be comfortable working with frogs, lizards, rodents and terrestrial arthropods. Must complete a minimum of 120 hours of work within the selected term. Interns must receive college credit for their internship. Internships are unpaid.

**Horticulture Intern** The selected candidate will assist the Aquarium horticulture staff with daily activities. *Essential Functions:* Assist with care of plants in the Rain Forest exhibits; Conduct plant maintenance, fertilization, propagation, and transplantation; Assist in display development; Perform special projects as determined by the horticulture staff. **Requirements:** Enrolled in an accredited college, pursuing a degree in Biology, Ecology, Environmental Science, or a related field. Must complete a minimum of 120 hours of work within the selected term. Interns must receive college credit for their internship. Internships are unpaid.

#### **Marine Animal Rescue Program (MARP) Intern**

The selected candidate will aid in all aspects of marine animals rescue program (MARP) operations, which involves the rescue, rehabilitation, and release of stranded marine mammals and sea turtles and implementing outreach efforts of the Aquarium's Ocean Health Initiative. The selected candidate is also responsible for technical and clerical assistance for the Conservation Department staff as necessary.

*Essential Functions:* Animal Care – participating in rescue and release trips, daily feeding, medical treatments, facility maintenance including cleaning and water changes, behavioral observations, and record keeping; Outreach – learning to interpret the MARP artifacts and conservation messages and participation in seasonal outreach and public education programs at the Aquarium and off site; Other duties as assigned – field work, etc. **Requirements:** College junior or senior majoring in environmental science or related field with course work in biology and ecology. Summer and January terms require 40 hours per week of work for 4 weeks. Spring and fall terms require 8 hours per day, one day per week of work. Must complete a minimum of 120 hours of work within the selected term. Interns must receive college credit for their internship. Internships are unpaid.

*Marine Mammal Trainer Intern*

The selected candidate is responsible for providing support to the marine mammal training staff. This internship's primary purpose is to teach the intern training theory. ***There is limited hands-on animal contact during the internship.*** *Essential Functions:* Prepares daily animal diets and dispenses vitamins as instructed; Responsible for the cleanliness and safety of all animal back-up areas; Assists in training, husbandry, and medical sessions; Participates in pre-show and pre-session preparations; Periodically participates in sessions involving swimming during enrichment and play sessions – no animals involved; Other duties as assigned. **Requirements:** College junior or senior majoring in life science or related field. Must have a basic understanding of marine mammal natural history. Must have good swimming skills. Must work well as a team member. Summer and January terms require 40 hours per week of work for 4 weeks. Spring and fall terms require 8 hours per day, one day per week of work. Must complete a minimum of 120 hours of work within the selected term. Interns must receive college credit for their internship. Internships are unpaid.

*Water Quality Lab Intern*

The selected candidate will assist in the water quality testing of all fish and mammal systems throughout the aquarium. Duties include testing water for salinity, pH, ammonia, nitrite, alkalinity, and copper according to lab procedures, and recoding neat, accurate data. The selected candidate will work closely with the Lab Technicians and the Animal Husbandry staff. **Requirements:** College junior or senior with general biology and chemistry work. Strong math skills and computer proficiency preferred. Must be available to work mornings. Must complete a minimum of 120 hours of work within the selected term. Interns must receive college credit for their internship. Internships are unpaid.

*Alaska SeaLife Center Internship* (Animal Husbandry - Avian Department)... The Alaska SeaLife Center, a non-profit organization in Seward, Alaska, is accepting applications for internship opportunities in the avian department. The Alaska SeaLife Center is dedicated to understanding and maintaining the integrity of the marine ecosystem of Alaska through research, rehabilitation and public education. This is a full time position for twelve weeks, available year-round. This position introduces basic animal care and husbandry techniques; duties include (50%) assisting in the daily care and maintenance of the Center's avian collection and (50%) assisting the Education Department. Applicants must be currently enrolled in an accredited college or university with a primary area of study in Biology, Zoology, Psychology or other animal related field. Recent college graduates may also apply. Applicants must have the ability to communicate effectively; understand and follow written and oral instruction; have a good sense of balance in order to maneuver around the exhibits and holding areas; able to lift 40 pounds; able to adapt to an ever-changing work environment; and available to work weekends and holidays. Public speaking skills are highly encouraged. This is an unpaid position, housing and/or a food stipend may be available for a limited number of candidates. Interns are responsible for all travel expenses. Inquire with Annette D'Alessandro, Intern Coordinator, Alaska SeaLife Center, P.O. Box 1329, Seward, AK 99664; Phone: (907)224-6343 Fax: (907)224-6320 , Web Site: [www.alaskasealife.org](http://www.alaskasealife.org)

*Positions posted with AAZK, Inc. may also be found on  
our website at [www.aazk.org](http://www.aazk.org)*

*Also, you may want to check out the AZA Member Institution job listings  
at <http://www.aza.org>*

# AAZK Membership Application

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*Other staff & volunteers*

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**\$35.00 Associate**

*Those not connected with  
an animal facility*

☐

**\$60 or up - Individuals  
Contributing/Canada**

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Mail this application to: AAZK Administrative Offices, 3601 S.W. 29th, Suite 133 Topeka, KS 66614. Make checks/money orders payable to AAZK, Inc. Must be in U. S. FUNDS ONLY. Membership includes a subscription to *Animal Keepers' Forum*. The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.

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**American Association  
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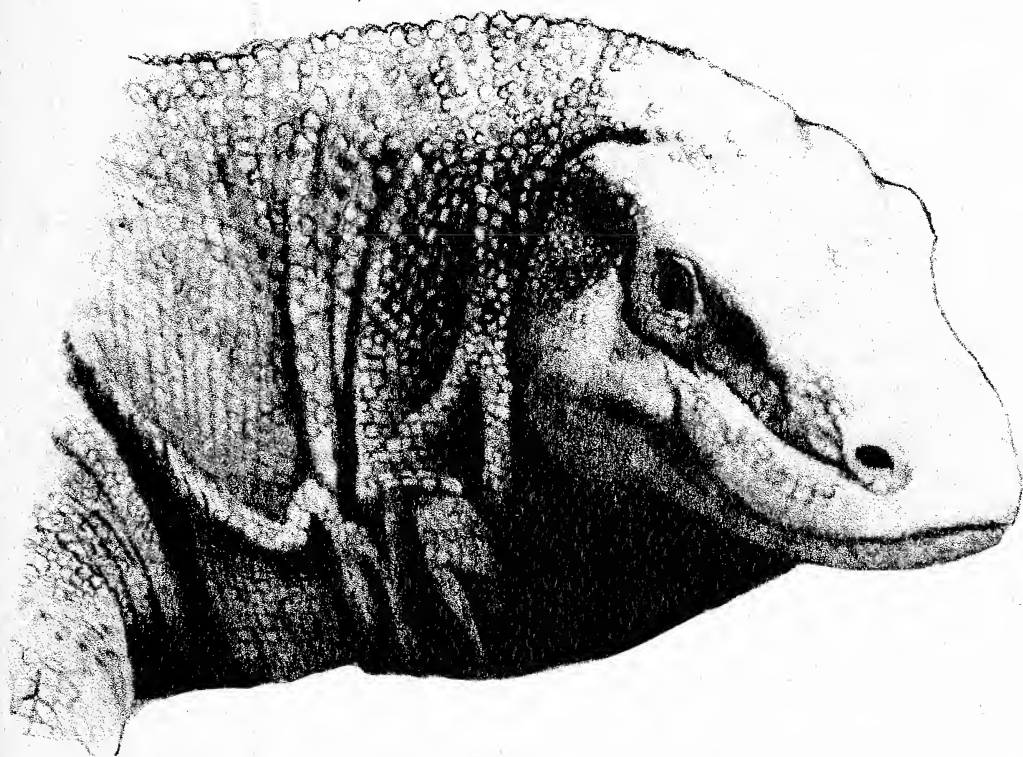
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**Animal Keepers' Forum  
25th Anniversary  
1974 - 1999**

78  
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# **ANIMAL KEEPERS'** **F O R U M**



**The Journal of the American  
Association of Zoo Keepers, Inc.  
DECEMBER 2002**

**Managing Editor:** Susan D. Chan • **Associate Editors:** Gretchen Ziegler, Sequoia Park Zoo & Kayla Grams, Lovell, WY • **Enrichment Options Coordinators:** Jan Roletto, Arcata, CA & Dawn Neptune, Utah's Hogle Zoo  
• **Legislative Outlook Column Coordinator:** Georgann B. Johnston, Sacramento, CA. • **ABC's Column Coordinator:** Diana Guerrero, Big Bear Lake, CA • **Reactions Column Coordinator:** William K. Baker, Jr., Little Rock Zoo • **The Water Column Coordinators:** Dan Conklin and Kevin Shelton, The Florida Aquarium and Bruce Elkins, Indianapolis Zoo

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**AAZK Executive Director:** Ed Hansen, AAZK, Inc., Topeka KS  
also serves as AAZK Liaison to the American Zoo & Aquarium Association

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Biological Values for Selected Mammals, 3rd Edition - Jan Reed-Smith, John Ball Zoo

AAZK Enrichment Notebook - Lee Houts, Folsom City Zoo



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## About the Cover.....

This month's cover features a Komodo Dragon (*Varanus komodoensis*) drawn by Dan Alldredge, a keeper at the Mesker Park Zoo, Evansville, IN. This Monitor lizard goes on record as the world's largest (not longest) lizard. Males average 8-10' (2.4-3m); females range from 7-8' (2.1-3m) in length. Weights range from 150-200lbs. (68-91 kg) with males being heavier. Average lifespan is 20 years. Unlike many lizard species, Monitors are unable to regenerate their tail if it is lost. Their diet consists of any other creature they can kill or scavenge from--this may include deer, goat, pigs, other komodos and, especially carrion. Captive diet is usually rats and mice. They are ambush predators that bite their prey and then trail the wounded victim until it succumbs to the bio/germ infection that the Komodo's saliva carries. They lay egg clutches of 20 and the young are tree-dwellers until they grow up. Their only natural habitats are the islands of Komodo, Rinjo, Gili, Mota, Ovad and Sami. The Komodo is on the Endangeres Species List due to habitat loss. This Komodo is "Naga", the largest of its species in North America. Naga is from Cinninnati Zoo, on loan to the Louisville Zoo. Thanks, Dan!

*Animal Keepers' Forum* publishes original papers and news items of interest to the animal keeping profession. Non-members are welcome to submit articles for consideration. Articles should be typed or hand-printed and double-spaced. Authors are encouraged to submit their manuscripts on a disk as well as in hard copy form. Manuscripts submitted either on disk or electronically as attachments to an email should be submitted in Microsoft WORD. All illustrations, graphs, charts and tables should be clearly marked, in final form and should fit in a page size **no greater than** 5.5" x 8.5" (14cm x 22cm). Literature used should be cited in the text (Brown, 1986) and alphabetically in the final bibliography. Avoid footnotes. Include scientific name (as per ISIS) the first time an animal name is used. Thereafter use common name. Use metric system for weights and measurements (standard equivalents may be noted in parenthesis). Use the continental dating system (day-month-year). Times should be listed as per the 24-hour clock (0800, 1630 hrs. etc.). Glossy black and white **or** color prints (minimum size 3" x 5" [8cm x 14cm] ) are accepted. Clearly marked captions should accompany photos. Please list photo credit on back of photo. Photographs may be submitted electronically as either JPEG or TIFF file attachments.

Articles sent to *Animal Keepers' Forum* will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for *AKF*. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the editor. The editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone, fax or email contributions of late-breaking news or last-minute insertions are accepted as space allows. Phone 1-800-242-4519 (US); 1-800-468-1966 (Canada); FAX (785) 273-1980; email is akfeditor@zk.kscoxmail.com<

**Deadline for each regular issue is the 10th of the preceding month.**

**Dedicated issues may have separate deadline dates and will be noted by the editor.**

Articles printed do not necessarily reflect the opinions of the *AKF* staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

Items in this publication may be reprinted providing credit to this publication is given and a copy of the reprinted material is forwarded to the editor. If an article is shown to be separately copyrighted by the author(s), then permission must be sought from the author(s). Reprints of material appearing in this journal may be ordered from the editor. Back issues are available for \$3.00 each.

E-Mail Addresses: You may reach Barbara Manspeaker at AAZK Administrative Offices at: aazkoffice@zk.kscoxmail.com< You may reach Susan Chan and *Animal Keepers' Forum* at: akfeditor@zk.kscoxmail.com<

**AAZK Website Address: [www.aazk.org](http://www.aazk.org)**

**BFR Website: <http://bfr.aazk.org>**

# *Scoops & Scuttlebutt*



## **Donations Received for Kenyan Adopt-A-School Project**

The AAZK Board of Directors and AAZK Administrative staff would like to thank the following for their donations to the Adopt-A-School Project which was outlined in the May 2002 issue of *Animal Keepers' Forum*, page 193. The Metro Boston Chapter of AAZK has donated \$100.00 to this worthwhile project as has AAZK member Andrew Main of Manchester, CT. The estimated cost of running one Primary School in Kenya for one year is \$8,000. If you or your Chapter would like to help, make checks payable to AAZK and designated for Adopt-a-School and send to: AAZK Administrative Office, 3601 SW 29th St., Suite 133, Topeka, KS 66614-3629.

## **Durrell Wildlife Conservation Trust Summer School**

Dates for next year's summer session will be 21 July to 9 August, 2003. This is an intensive course aimed at zoo staff, students and lay people with a strong interest in conservation and/or captive breeding. A combination of lectures, workshops and project work provides participants with a deeper understanding of endangered species management and how zoological institutions can be an aid to species survival.

For further information contact: The Summer School Co-ordinator, Durrell Wildlife Conservation Trust, Trinity, Jersey, Channel Islands JE3 5BP; Tel: 01534 860037; Fax: 01534 860002; E-Mail: [itc@durrell.org](mailto:itc@durrell.org) Closing date for applications: 15 February, 2003

## **EO Column Seeks Editorial Candidates**

The Enrichment Options column is looking for 1-2 people who have an interest in becoming an editor for the column. Those interested should have an "above-basic" grasp of environmental enrichment and have the desire to challenge their peers with new ideas, theories and information. This is a great opportunity to challenge yourself professionally!

Please send a letter of interest no later than 1 February 2003 to: Animal Keepers' Forum, Attn: Enrichment Options Column, 3601 S.W. 29th St. Suite 133, Topeka, KS 66614-2054.

## **Gorilla Haven Announces Gorilla Keeper Grant**

The Dewar Wildlife Trust Inc. (Gorilla Haven) is pleased to announce the first winner of the Debbie McGuire Gorilla Keeper Grant. There were six applications from literally around the world - from Mysore, India; Miami, FL; Madrid, Spain; Johannesburg, South Africa; Jakarta, Indonesia; and Buffalo, NY.

All six applications were reviewed by the GH Board of Advisors and some Special Friends, including a zoo director, an AZA official, an Animal Protection Activist and a lawyer. Twenty-nine of the 35 people asked, voted, rating each applicant from first to sixth choice. Applications sought help to travel to Africa, other zoos and/or conferences, to print educational materials or provide enrichment equipment for gorillas at their zoo, and/or to further their education. Votes were tallied and assigned numerical values based on ranking. Since the two top vote recipients had such close numbers, we decided to call it a tie.

Grants were awarded to: C. Shankara of Mysore, India and Juanvicente Martinez Santana of Madrid, Spain. Each gorilla keeper will be awarded \$500. Within 120 days but not later than 01 November 2003, each keeper will provide a written report on how the money was used, which will then be featured in a subsequent *Gorilla Gazette*. To learn more about Gorilla Haven, log on to: <http://www.gorilla-haven.org/>

### **Working Vacations/Conservation Courses**

Would you like to work with wild cats in Central America? The LiFeline cat research and rehabilitation centre in Belize is running working vacations/conservation courses. The centre is situated in the Maya Mountains in central Belize and works with the five native species of cat: jaguar, puma, ocelot, margay and jaguarundi. A research programme is being run from the centre, including camera-trapping and radio-tracking in nearby reserves. LiFeline also takes in confiscated and problem cats. Some of these have been caught raiding livestock, others are former illegal pets. Wherever possible, cats are rehabilitated and returned to the wild, but for some this is not possible and so they remain on our 60-acre reserve.

LiFeline is a registered NGO in Belize and is a government-approved facility. Course members will have the opportunity to take part in all aspects of the centre's work, from caring for the resident cats to monitoring newly-released animals. In addition you will learn about jungle ecology and can visit nearby Mayan archaeological sites. Each course runs for 10 days and the first three scheduled for 2003 are 1-10 February, 1-10 March, and 19-28 April. Accommodation on a nearby ranch, airport transfers, and daily transport are included in the cost but not return flights to Belize. For more information and booking details please check out <http://www.li-feline.com> and click on Volunteering and Courses."

### **More Websites of Interest to Keepers**

You might like to check out the following websites:

#### **Zoo Tycoon**

<http://www.microsoft.com/games/zootycoon/ultimatezookeeper.asp>

Wildlife Information Network Site.

<http://www.wildlifeinformation.org>

Savanna Elephant Vocalization Project's website,

<http://www.elephantvoices.org> is now online.

Interesting site. Well worth a visit.

Save the Rhino Monthly Update Ezine

<http://www.savetherhino.com/members.php?id=12>

### **Please Note New Email Addresses for AAZK Administrative Office/AKF**

Members are asked to note that there are new email addresses for both the AAZK Administrative Offices and for *Animal Keepers' Forum*. These changes became necessary when our cable service switched from Roadrunner to their own network. Some people have still been sending to our old email addresses--this information gets blown away in cyberspace, so please note new addresses!!

The address for Barbara Manspeaker at AAZK Administrative Office is:  
aazkoffice@zk.kscoxmail.com

The address for Susan Chan and *Animal Keepers' Forum* is:  
akfeditor@zk.kscoxmail.com

**>>Please begin using these new addresses immediately<<**

# Coming Events

**Animal Behavior Management Alliance Conference-**  
23-28 February 2003. Hosted by Busch Gardens Tampa Bay and the Center for Elephant Conservation. For information contact Thad Lacinak at (407) 363-2651 or email him at [Thad.Lacinak@AB-AdventureParks.com](mailto:Thad.Lacinak@AB-AdventureParks.com)

**Eleventh Annual International Association Of Avian Trainers and Educators Conference** - 12-15 February 2003 in Portland, OR. Hosted by the Oregon Zoo and held at the DoubleTree-Lloyd Center Hotel. For more information contact Cathi Wright ([wrighte@metro.dst.or.us](mailto:wrighte@metro.dst.or.us)) or Shannon LaMonica ([lamonicas@metro.dst.or.us](mailto:lamonicas@metro.dst.or.us)) or call them at (503) 220-5713.

**2003 Elephant Ultrasound Workshop for Wildlife Veterinarians** 26-20 March 2003 and 4-8 June 2003. At Riddle's Elephant and Wildlife Sanctuary, AR, USA. For registration information please contact [elephantsanctuary@alltel.net](mailto:elephantsanctuary@alltel.net)

**The 2003 All Florida Herpetology Conference & Conserving Amphibians and Reptiles Through Education, a PARC National Conference**

Announcing the 26<sup>th</sup> Annual *All Florida Herpetology Conference* presented by the Florida Museum of Natural History with assistance from the Santa Fe Community College Teaching Zoo. This year's event will be held in association with a conference on *Conserving Amphibians and Reptiles through Education*, organized by Southeast Partners in Amphibian and Reptile Conservation (SE PARC). Both events will be held at the Sheraton Hotel in Gainesville, FL.

*All Florida Herpetology Conference: 5-6 April 2003*  
Contact: Herpetology @ (352) 392-1721; e-mail: [maxn@flmnh.ufl.edu](mailto:maxn@flmnh.ufl.edu); Florida Museum of Natural History, P.O. Box 117800, Gainesville, FL 32611.  
**(Call for papers and keynote speakers until 7 February 2003)** Visit AFHC website: <http://www.flmnh.ufl.edu/natsei/herpetology/afhc.htm>

*Conserving Amphibians and Reptiles Through Education (PARC Conference): 6-8 April 2003*  
Contact: George L. Heinrich, Heinrich Ecological Services, 1213 Alhambra Way S., St. Petersburg, FL 33705-4620; phone: (727) 865-6255; e-mail: [highpine3@aol.com](mailto:highpine3@aol.com); Visit PARC website: [www.parcplace.org](http://www.parcplace.org)

**Tenth Annual International School for Elephant Management** - 25 April - 8 May 2003 - Riddle's Elephant and Wildlife Sanctuary, AR, USA. For persons having worked full-time with elephants for at least one year. For registration information please contact [elephantsanctuary@alltel.net](mailto:elephantsanctuary@alltel.net)

**Association of Avian Veterinarians 24th Annual Conference & Expo** - 25-29 August 2003 in Pittsburgh, PA. To be held at Pittsburgh's Westin Hotel and the


David L. Lawrence Convention Center. Theme is "Take Flight in Pittsburgh". Program will include lectures and Master Classes. Call for Papers - you may submit applications electronically, by mail or by fax. To submit on the Internet go to [www.ConferenceOffice.com/aav](http://www.ConferenceOffice.com/aav). If you wish to receive an application form or more information on presenting call the AAV Office at (303) 756-8380, ext. 13. Deadline is 25 October 2002. Fax# is ((303) 759-8861.

**2003 AZAD Annual Conference** - 9-14 September 2003. Hosted by Omaha's Henry Doorly Zoo, Omaha, NE. Interested parties may contact Judy Sorensen at 8040 Park Dr., Ralston, NE 68127-3744 or by email at [howard@infinity.com](mailto:howard@infinity.com)

**First International Conference on Zookeeping in 2003** - The Netherlands - Will be held between 2-10 October at Birdpark Avifauna. For further information please visit: [www.iczoo.org](http://www.iczoo.org)

**Sixth International Conference on Environmental Enrichment** - 2-7 November 2003 in Johannesburg Zoo, South Africa. The provisional conference attendance fee is US\$250, but this will be confirmed and reduced based on price and currency fluctuations towards the end of 2002. South Africa is an exciting destination that boasts a number of world class zoos. Further information can be obtained from our website at [www.jhbzoo.org.za](http://www.jhbzoo.org.za) Please feel free to contact Mathew van Lierop who will be coordinating the conference at +27 11 646 2000 ext 233 or at [mathew@jhbzoo.org.za](mailto:mathew@jhbzoo.org.za)

**NOTICE:** The International Serow Summit/the 2nd Symposium on Capricornis and Related Species, originally planned for 2002 by the Japan Serow Center has been delayed until the Fall of 2004. Details will be published as they become available.



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# AAZK Announces New Members

## New Professional Members

Stephanie Spitko, **Center for Lake Champlain (VT)**; Yuri Mitzkewich, **Monkey Jungle (FL)**; Denise Ilery, **Lowry Park Zoo (FL)**; Krissy M. Hamilton, **Hattiesburg Zoo (MS)**; Karen D. Schmidt, **Cincinnati Zoo & Botanical Garden (OH)**; Brett Linsley, Michael J. Murray, Sarah Davis and Todd Schwenk, **Binder Park Zoo (MI)**; Amanda J. Becker, **Dakota Zoo (ND)**; Lynne Marie Murphy, RVT, and Lauren Marvel, **St. Louis Zoo (MO)**; Seana Jean Davidson, **Tulsa Zoo (TX)**; Angie Pyle, **Houston Zoo (TX)**; Jeff Berrett, **Willow Park Zoo (UT)**; Jamie C. Maurer, **Wildlife World Zoo (AZ)**; and Julia Walz, **Santa Ana Zoo (CA)**.

## Renewing Institutional Members

HMS Zoo Diets, Inc., Bluffon, IN  
A.J. Higginbottom, President

Michigan State University Library  
East Lansing, MI

Serials Dept./Ellis Library  
University of Missouri - Columbia  
Columbia, MO

Cedar Cove Feline Conservation Park  
Louisburg, KS  
William D. Pottorff, Director

## Renewing Contributing Members

Steve H. Taylor, Director  
Cleveland Metroparks Zoo  
Cleveland, OH

## Watchlist of Declining U.S. Birds

The National Audubon Society reports that "one-quarter" of the 800 species of native U.S. birds are "declining or in trouble". The report indicates that over 200 species "face shrinking numbers, restricted habitat or other threats including many songbird species that have "declined by as much as 50% or more," such as the cerulean warbler down by over 70% and the Midwest's Henslow sparrow down 80%. WatchList 2002 (<http://www.audubon.org/bird/watchlist>), follows up on a 1996 inventory of "birds facing decline and habitat loss" and is a comprehensive website to assess the status of the "201 bird species in the U.S. that have the greatest conservation needs."

## Timber Giant Moves to Protect Spotted Owl

One of Canada's largest logging companies, International Forest Products (Interfor) has voluntarily shut down "all its logging operations in northern spotted owl habitat" says the *Vancouver Sun*. According to Interfor, the shut down, which was "hailed by environmentalists," came "after an article in the Vancouver Sun described the desperate plight of the owl, which appears to be under more risk of extinction than government research has indicated." Sierra Legal Defence Fund called the move a "breakthrough in its attempt to save the owl" which is "declining throughout its habitat both in Canada and the northern U.S."

--GREENlines Issue#1743 11/08/02



## NEW IN PAPERBACK

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# ABC's

## ABC's: Animal Behavior Concerns and Solutions



*A Question & Answer Forum for Animal Professionals*

©2002 by Diana Guerrero, Independent Behavior Consultant  
Ark Animals of California, Big Bear Lake, CA

### **Question(s)**

Can you tell me how to structure an ethogram or where to find a good source for them?

### **Answer**

An ethogram is an inventory of behaviors for a specific species of animal. The behaviors are organized into categories that help develop a source of reference for a specific study and subsequent projects.

Behaviors are named and then described. Usually a shorthand code is made. During timed observations, this enables the researcher/observer to quickly note the behaviors glimpsed during their research scans.

Rather than start something from scratch, you should first search through the wide variety of resources available. You can start with a local library if you do not have access to a university or zoological institution. If you don't know how to search through some of the journals or find the specific resources, ask the librarian.

Usually a municipal zoo or aquarium will have a resource library or staff who can help direct you. However there are many organizations and Internet resources that you might find useful. If you would like to be more specific as to what species and what type of project you are doing, I would be glad to get into more details. In the meantime, here are a few Internet resources:

### **American Society of Primatologists**

<http://www.asp.org/>

### **Animal Behavior Management Alliance**

<http://www.theabma.org/>

### **Animal Behavior Society**

<http://www.animalbehavior.org/>

### **AZA Behavioral Advisory Group**

<http://www.ethograms.org>

### **Center for the Integrative Study of Animal Behavior**

<http://www.indiana.edu/~animal/>

**Primate Information Net**

<http://www.primate.wisc.edu>

**Gorilla Advisory Group**

<http://www.primate.wisc.edu/pin/gorillas2.html>

**Disney's Animal Kingdom**

(Enrichment, training and taxon advisory groups)

<http://www.csew.com/>

**Journals Of Interest****American Society of Mammalogists**

<http://www.mammalsociety.org/pubjom/index.html>

**American Society of Naturalists**

<http://www.journals.uchicago.edu/ASN/directory.html>

**Animal Behaviour**

<http://www.academicpress.com/anbehav>

**Applied Animal Behavior Science**

<http://www.elsevier.com/locate/applanim>

**Behavioral Ecology & Sociobiology**

<http://link.springer.de/link/service/journals/00265/index.htm>

**Behavioral Ecology**

<http://beheco.oupjournals.org/>

**International Society for Applied Ethology**

<http://www.sh.plym.ac.uk/isae/home.htm>

**Other General Reference****Big Chalk**

(Search under animal behavior or ethograms)

<http://www.bigchalk.com/>

**Biosis**

(Search under resource guide behavior)

<http://www.biosis.org/>

**Column Break & Call For Contributions**

Thank you for your continued interest in this column. I'll be taking a short break to finish up my latest book project, but I'd still love to receive any questions you have for discussion in this column later in the year. Questions for ABC's should be submitted to me directly via email: [arkabc@arkanimals.com](mailto:arkabc@arkanimals.com), through the ABC'S questionnaire on my website, or via regular mail: c/o ARKANIMALS.COM, P.O. Box 1989-215, Big Bear Lake, CA 92315 USA.

If you would like to contribute a personal animal-related story on how an animal (or animals) have impacted you, please visit <http://www.allianceofwriters.com> for additional details.



# Behavior-Based Animal Care Program

By  
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We are always looking for ways to make our animals' lives richer and more meaningful. As time goes on it becomes more and more difficult to find innovative ideas for projects that our animals will find interesting and useful. Animals require an array of activities or they will become bored. For this reason animal care, enrichment and exhibit development must be a continuous and evolving process. However, creativity alone is not enough if there is no clear plan to guide our programs. In addition, time constraints limit the number of hours we have to impact our animals' lives in a positive way.

Animals cannot be cared for properly until we fully understand their behavior. After a good deal of research and observation of both wild and captive animal behavior, we should be able to take what we have learned and apply it to overall animal care. The result would be termed A Behavior-Based Animal Care Program. Such an approach will give us needed guidance in program development. It will also make it abundantly clear that traditional animal care does not provide for an animal's needs within its normal "time and space pattern" (Circadian Rhythm).

Why is a Behavior-Based Animal Care Program so important? Because an animal's behavior is a constant and dependable indicator of both its health and the success or failure of an animal care program. Amid all of the other variables we must deal with, an animal's "species typical" behavior is a constant which is verifiable and measurable. Moreover, an animal's "species specific" behavior follows the same scientific principles in the zoo as it does in nature. In the wild normal behavior is released by a variety of conditions present in the environment. The same rule applies in the zoo. However, the zoo environment need not be an exact replica of nature as long as it frees normal or desired behaviors. Animal care, enrichment and exhibit development programs that release normal behaviors are less likely to become boring, because such programs satisfy an animal's innate need to express these behaviors. Innate behaviors "want within" until the appropriate "releasers" in the environment free them, thus allowing animals to live a normal, balanced life.

Wild animals work hard in their territories by using all of their adaptations to satisfy their needs. Satisfying basic needs allows them to achieve a balance in their lives called "Homeostasis". Everything an animal requires to maintain "Homeostasis" can be found in its territory. No need goes unsatisfied and no behavior is unused. You can take an animal out of its environment, but you can't take the environment out of the animal. In the zoo we must create an environment for our animals which leaves no need unsatisfied and no behavior unused.

Addressing the behavioral aspects of animal care is not only an immediate issue, it also deals with the potential loss of animal behaviors altogether due to lack of use. Recent studies of evolution show that under certain conditions, it takes place much more quickly than we once thought. The implications of these studies show animals must either "use it or lose it". A study of seed-eating birds in the Galapagos revealed beak changes within only a few generations. This occurred because the birds had to subsist on seeds that were harder and coarser than their traditional food due to a prolonged drought. Those progeny whose beaks became shorter and thicker through the "natural selection" process survived, while those with weaker beaks perished. Another, older study showed that zoo specimens were less robust than their wild relatives. Generations of inactivity in zoos have resulted in animals with weaker bones and muscles. In nature evolutionary change has a purpose: **survival!** In the zoo morphological and behavioral changes due to inactivity serves no biological function. There is a price to pay, however. Behavioral and morphological degradation creates animals that may look sound, but they are not.

Perhaps we need to look at animal care in a new way. If we could observe the care we give our animals purely from their perspective it would immediately become obvious that such care is people-

oriented rather than animal-oriented. Although the care we give animals while we are in the zoo may be excellent, what we do for them affects only a small part of their lives. After we leave for the day, many animals must endure a penal existence, locked in small cages, dens or stalls until we return the next morning.

As you know, we cannot dedicate a full eight hours to our animals, as much as we would like to do so. Take a few moments to review your day and you will see what I mean. We begin work at 8:00 a.m. and leave for the day at 5:00 p.m. Most of us take lunch from 12:00 to 1:00 p.m., and we are required to take two fifteen-minute breaks, one in the a.m. and one in the afternoon. We must also clean exhibits, haul waste, prepare diets, haul supplies and complete reports. Our animals are released into their exhibits between 8:15 and 8:30 a.m., and they are put up for the day between 4:30 and 4:45 p.m. This schedule means not only less time for our animals, it means they must somehow live a normal life in lock up, or a behavioral void, for the next 16 or 17 hours. Because all animals' lives are governed by the 24-hour day (Circadian Rhythm), their lives cannot be condensed into our eight-hour day.

The old eight to five syndrome still controls both our animals' lives and the level of care we can give them in a detrimental way. This last bastion of "the way things used to be" has been around for as long as zoos have existed in this country. It is as ineffective now as it was 100 years ago. We are now well into the new millenium. There have been miraculous improvements in animal care, and zoos are prospering as never before. Isn't it time to acknowledge and take advantage of the last frontier in animal care? The lost 16 or 17 hours of our animals' lives offer us many new behaviors to be discovered, and new animal care programs to be developed.

Developing a comprehensive Behavior-Based Animal Care Program will allow us to identify and address the key areas in animal care, enrichment and exhibit development that are now restricted by our eight-to-five day and the lost world our animals live in at night. It will also give us many new ways to provide our animals with meaningful activities that both utilize normal behavior patterns, and employ morphological adaptations. This will result it healthier animals that behave normally within their natural "time and space pattern." Let's examine some of the possibilities

### **Exhibit Development**

There is no magic formula for designing a new exhibit or making needed improvements to an existing exhibit. We always have that doubt in the back of our minds that what we have done will not work. Of course, when we let the animals out into the exhibit, the day of reckoning always comes and we see if it is functional or not. If you make sure the end product meets your animals' behavioral needs, your chances of creating a successful exhibit are greatly improved.

Finding a way to take the information we have gathered about our animals and incorporating it into the design of an exhibit is a difficult task. It may help to break the animal's behavior down into its component parts. An animal's behavioral repertoire is comprised of many behavioral complexes. Most of these are sequential in nature, so one behavior leads to another until the complex has been completed, *i.e.*; marking behavior is not simply the act of placing a pheromone on an object. It involves completing a number of activities within a specific time and space pattern. First, the animal must identify appropriate objects for marking throughout its territory. Then, each object is marked with urine, feces, or direct gland-to-object contact. After each item is marked, the animal examines it to be sure the coverage and odor are sufficient, then moves on. Only until the entire territory has been marked to the animal's satisfaction is the marking behavioral complex complete.

Once you have all of the behavioral complexes within the animal's behavioral repertoire, you can begin to identify the factors within the animal's territory which release them. Use your environmental information to create an expression zone for each behavior complex. Make sure each expression zone has its own identity within the exhibit. Overlapping expression zones in a jumble of components will be ineffective and unattractive. I can give you a simple example of this process by using the North American River Otter (*Lutra canadensis*). This incredibly attractive and active animal has quite a few behavioral complexes that are readily identifiable. I am sure you otter experts can come up with many more than I can. The obvious complexes are food procurement, fur maintenance and grooming, territorial behavior, den maintenance and comfort activities, play behavior, mating behavior, and so on.

The food procurement behavior complex is a good example because it has a lot of components and involves a major part of the exhibit, the pool. Since food procurement involves a variety of activities, a sterile, one-dimensional pool satisfies none of the otter's behaviors (A behavior "wants within" until environmental conditions release it and the behavior's innate need to be expressed is satisfied). Instead, I imagine a navigable stream with a series of small ponds leading to a large pond. A flowing stream would create a current, requiring the otters to balance and adjust themselves as they search for food. The stream, pondlets and pond would have a variety of features, such as small stones, rocks, logs, crevices, small caves and openings to facilitate utilization of the entire behavioral complex i.e., swimming, searching, manipulating, chasing, capturing, eating, clean-up and more hunting behavior. If you are lucky enough to have a source for safe live food you can add another dimension by releasing live food in several areas of the pool expression zone. If you can locate some current wildlife films about otter behavior in the wild, you will find a lot of good information for the development of your entire otter exhibit. There is no better model.

### **Learning What Your Animals Know**

Our animals live in two different worlds: One is the world we know in our eight-to-five day. The other exists from the time we leave in the evening until we return the next morning. We know little or nothing about this other world. Although video cameras are sometimes used to record an unusual birth or parental behavior at night, little has been done to explore this part of our animals' lives. This unknown world our animals live in offers us an opportunity to discover new behaviors never before recorded.

Many of the new and significant discoveries about animal behavior are still being made in the wild. How can this be when we have thousands of animals living in hundreds of zoos in this country? It is obvious when you consider the time factor and the likelihood that animals behave differently after we leave for the day. If you look at the discoveries made by Goodall, Fossey, Schaller, Moss and others, you will find they lived with these animals on a daily basis for years before they had a "Breakthrough" and the animals trusted them enough to share what they know! These people became so familiar to the animals that they revealed their deepest secrets and most unusual behaviors.

What an incredible opportunity we have available to us immediately. We don't have to travel to Africa, Asia or South America to study animals in their world. We have an unexplored world right here in our zoos. It is that other world our animals live in.

### **Know Your Animals Better Than Anyone**

There has been no time in history when there has been more pertinent information available about wild animals and their natural habitat. When I began my zoo career there was "Wild Kingdom", Crandall, Hediger and the *International Zoo Yearbook* and that was about it. Now there are hundreds of books, TV programs, TV channels, films and the Internet. These sources are a gold mine of information about our animals' behavior in their natural habitat.

Few of us can afford to travel to other countries to study animals in their natural habitat. Luckily, a good deal of valuable information is readily available to us at a reasonable price right here in the United States. Programs such as National Geographic, Nova, and TV channels like Animal Planet, Discovery and Outdoor Life have many programs about animals living in the wild. These excellent programs can provide us with valuable information about our animals that we can readily apply to animal care and exhibit development. There is no substitute for seeing animals behaving normally in their natural habitat. I don't think an effective, functional exhibit that meets our animals' needs can be created until we see how our animals live and behave in the wild.

A few months ago, I attended "The Best of the Banff Film Festival". Most of the films are about radical outdoor sports, but they usually have a few wildlife films. I was fortunate enough to go on a night when an incredibly entertaining film about Geladas (*Theropithecus gelada gelada*) was playing. The film took place in the stunning mountains of Ethiopia. It centered on a large "HERD" (Napier & Napier, 1967) of Geladas and the woes of an Alpha male in his attempts to maintain his status against the onslaught of three bachelors ("The Bachelor Boys"). The program showed a lot of interesting Gelada behavior in their natural habitat. One activity that all of the Geladas enjoyed, especially the youngsters, was tree climbing. There weren't a lot of trees, but the ones that were

there were used freely. When I got home I thought it would be interesting to look in my primate books to see what information was available about Geladas. Surprisingly, Napier & Napier's *A Handbook of Living Primates* claims "Ögeladas probably never climb trees". This is not an earth-shaking discovery, but it does show what is available to the trained eye. Perhaps captive Geladas would appreciate being able to climb trees, or tree-like structures.

The film's narrator claimed that Geladas are the only primate that is a "true grazer." I couldn't tell, because the film didn't cover a full seasonal cycle, but the animals certainly did a lot of grazing in the program. Geladas have a highly opposable thumb that assists their grazing activities. They graze sitting on their rumps. Both hands are employed as they quickly pull grass and scoot from one place to another. An upright posture is a distinct advantage in predator detection that the Geladas have over the ungulates that normally inhabit this ecological niche. Much like ungulates, Geladas play and sleep on precarious ledges, and during the day they graze on meadows and valleys at great heights.

As I mentioned before, this information is not a major discovery, but it does demonstrate that there are discoveries to be made that may be unknown. It also demonstrates that important information about our animals' behavior and their natural habitat is available to us for exhibit development. For example, Geladas in zoos could prosper if we provided tree-like climbing apparatus, grassy areas to graze on and sleeping ledges similar to the ones in the film.

### **How to Find More Time for Your Animals**

Time is one of our most precious commodities. We never seem to have enough. With some planning and teamwork you can find ways to save time, so that you can commit more time to your animal care. I have provided some helpful suggestions, which you can use to develop a program to save a substantial amount of time each day.

1. Plan each day ahead of time. This will help you determine whether you are unknowingly wasting time, or if your routine is efficient. You may be surprised to see how your day plays out if you plot each activity and how long it takes to complete.
2. Prepare for the next day by setting out all of the supplies and tools you will need to start your day. If you can't do that, store what you need in a place that will facilitate an efficient beginning to the day without backtracking or searching for what you need.
3. Train your animals to come when they are called. It will save a lot of time on your rounds, especially if you have to put them up before cleaning the exhibit.
4. Form alliances with keepers who think the way you do. They can help you on special projects or stocking up on supplies that take a lot of time to haul.
5. Reduce backtracking. Nothing wastes more time than having to constantly leave the area to search for what you need to get the job done.
6. Develop ways to make your routine more efficient. Where you begin and end your cleaning or feeding routine makes a lot of difference in the amount of time consumed. Sometimes, you can start and end the phases of cleaning in the same place. By placing all of your tools and cleaning supplies in this location you can save a lot of steps and time. If you have a long route you can save time by strategically setting out rakes, shovels, applicator and disinfectant so that they are precisely where you need them after you complete each phase of cleaning. Haul your hoses out and place them in a location that will take only a few steps to drop one and pick up the next as you do your washing and rinsing.
7. Evaluate the location of food storage or food drop off areas to determine if they are in the most efficient place. Locate a cart or clean wheelbarrow so you can haul a greater amount of food more quickly. Hand-carrying everything wastes a lot of time.

8. Draw a schematic of each area you are responsible for. Trace your steps as you do your route on a normal day. Do you start your route in the most efficient spot? Does each area where you clean or feed on your route follow the other in a way that saves time and eliminates backtracking? Look for ways to eliminate overlapping steps and procedures so your routine can be streamlined.
9. Use your volunteers wisely. They can do a lot of things that will save you time. Put your animals up and use volunteers to help clean your exhibit. Allow them to replenish food and cleaning supplies. If you have diets that are time-consuming to prepare, teach a volunteer to do it and then have him or her deliver the diets to a specific location. If you have regular enrichment programs for your animals, let volunteers help you. You will get more done and it will give you time to expand your program.
10. Starting early and working late doesn't sound too appealing, but it can save you time later on, and it will get your animals out into their exhibits much earlier. Beginning 30 minutes early will pay you and your animals back an hour later on. Most zoos require keepers to check in at the keeper room at 8:00 a.m. before starting work. If you don't begin work until leaving the keeper room, you will be lucky to start getting your animals outside for the day by 8:30 a.m. By starting at 7:30, however, you have given your animals an additional hour in the exhibit. If you put your animals up 30 minutes later than usual and they are trained to come when they are called, you can leave them outside longer. So, if you start 30 minutes early and work 30 minutes late you can give your animals at least one-and-one-half hours more time to enjoy life in their displays.

There are a lot of things you can do with extra time on your hands. For example,

- Expand your enrichment program.
- Train your animals to cooperate during cleaning, examinations or emergencies.
- Develop interactive programs.
- Work on projects to make your exhibits more natural.
- Break through with flighty, fearful animals.
- Do research on your animals.
- Find out what your animals like to do.
- Work on expanding your animal's day.
- Create ways to occupy your animals at night.
- Develop a program to find out what your animals do at night.

### **Creating a More Natural Nocturnal Exhibit**

Small to medium-sized exhibits located in buildings offer many opportunities to develop new display techniques that will employ all of an animal's senses. As a result, such exhibits release new, or normal behaviors the animal has never before used. While traditional exhibits in these buildings may look natural, they allow animals to use only a few of their senses and they are therefore behaviorally deprived. This area of research and development is wide open to anyone who wants to investigate the possibilities. For those of you who feel you have exhausted all of the possibilities for your animals' care, this approach will open up the next era in animal care for you. I would like to illustrate this concept by using the development of a more natural display for nocturnal animals.

I have visited quite a few nocturnal exhibits. They are another world. It is entertaining to see the animals scurrying around, seemingly at ease with their surroundings. They easily accept our intervention when we reverse the day-night cycle so that they will be active for zoo patrons. The nocturnal ambiance we create is as much for the visitors' entertainment as it is for the animals' well-being. We also trick our minds into believing our nocturnal exhibits are like the night, when the only thing about them that actually resembles night is that they are dark. If animals can easily buy into the concept that a dark room is nighttime, I am convinced that we can improve their lives in untold ways by creating a nocturnal exhibit that is infinitely more natural.

Real night truly is another world. It feels different than daytime. The night air is softer – fresher. The air is filled with odors and sounds the daytime air cannot hold. The evening sky is not static or one-dimensional, but is alive with hundreds of twinkling stars, and clouds that pass overhead. The moon also illuminates the sky as it passes through its many phases. With today's technology, it would be relatively easy to re-create the real night. I feel confident that the animals would not only react to the resulting realism, they would welcome it.

The senses of nocturnal animals are very acute. Not only are their eyes highly adapted to see in darkness, their senses of smell and hearing play a major role in living a normal life at night. Most nocturnal exhibits do not offer animals any way to use all their senses. The parts of the brain that control these senses are highly developed. An exhibit that provides nocturnal animals with ways to utilize those parts of their brain, along with the behavioral patterns they employ, will make these animals much happier and healthier.

It would be very exciting to see someone try to create a nocturnal display in this setting. Even if no major changes in behavior result, the animals' lives would be much richer. I have some suggestions for creating a more natural nocturnal exhibit that could easily be done. I hope some of you try them.

1. Create a Natural Sky:
  - Build a blue-black sky to cover the exhibit.
  - Use fiber optic technology to create the stars and major constellations (Re-create the twinkling effect).
  - Cut a template for each cycle of the moon. Install a light behind the template to illuminate the moon.
  - Build a tram to move the moon across the sky.
  - Create a few clouds to pass over and cover part of the sky a few times a week.
2. Create a Natural Day-Night Cycle:
  - Use timers on the lights to simulate day and night.
  - Set the timers to match the seasonal changes that occur where the animal normally lives.
  - Install a rheostat so the transition to day and night will be gradual, as if there was a sunrise and sunset.
3. Add Sound To Your Exhibit:
  - Buy CD's or tapes that contain sounds of the night. Preferably, these sounds would be from the animal's country of origin. Play more than one tape at a time if that would add realism.
  - Have someone record sounds from the same animals living in another zoo. Play the tapes occasionally to stimulate territorial behavior.
  - Find recordings that feature thunder, rain falling and blowing wind. Mist the exhibit and blow in cool air for realism. Create flashes of lightning.
4. Add A Variety Of Odors:
  - Construct five or six containers out of 1/4" to 1/8" hardware cloth to hold material for scent transmission.
  - Place fresh-cut grass, leaves, soil and flowers in the containers so that the scent can be blown into the exhibit by fans.
  - Get urine and feces from other zoos that have the same animals. Wrap the waste in a wet paper towel and blow the scent into the exhibit.
  - Go to a health store or herbalist to get a variety of scents to blow into the exhibit.
  - Gather fresh leaves and grass after a rain and blow the sent into the exhibit.
5. ??? What Else Can You Think Of ???
6. Observe For Before and After Behaviors

I hope someone tries some of these suggestions. These ideas also apply to small animal exhibits located in buildings that have no outdoor display and no windows to the outside that would indicate to the animals whether it is day or night. Such exhibits need not be nocturnal, either. Many of these animals have behaviors “wanting within”. Give it a try. **Behaviors Are Free!**

### **Discover What Your Animals Like To Do**

Most animals have individual behavioral preferences. It may either be a “species typical” behavior or it may be something only that individual likes to do. If you can discover one or more of these preferences and encourage your animals to use them, it will give them a great deal of pleasure. Allowing your animals to use preferred behaviors enriches their lives as well as strengthening the keeper-animal relationship.

Most of the articles I have written for *AKF* have covered the importance of animal behavior in all areas of animal care. Basing animal care on behavior is the future of animal care. In my articles, “Play Behavior - Its Role in Evaluating Animal Health” (*AKF*, December 1995) and “Building a Relationship With Your Animals” – “Breaking Through” (*AKF* April 1993), I discussed the value of encouraging your animals to participate in pleasurable activities, such as play behavior or keeper/animal interactions. These are activities that the animals look forward to. In addition, because animals choose these pleasurable activities, they do not lose interest, as they do with the more mundane daily routines.

A few years ago, I took care of a solitary cow Asian Elephant (*Elephas maximus*) named “Ellen”, who lived in the Little Rock Zoo. I am happy to say that since I left they have acquired a friend for Ellen named Mary. It was the kindest thing we could have done for her. I have worked with several solitary elephants, and they seem to have strong behavioral preferences. “Ellen” really enjoyed carrying things, and would readily “pick up” objects and carry them if asked to do so. I thought it would be interesting to find out if “Ellen” had a preference when it came to the size of tree limb to carry. I knew the tree crew would be in soon for spring trimming, so I asked them to save 12 or 15 limbs of various sizes. They knew the limbs were for “Ellen”, so they happily saved them for me. I placed all of the limbs in a large pile out in the new yard so that “Ellen” could sort through them and make a selection. The next morning when I checked on her, I found she had carried six limbs of various sizes into the barn. None of the limbs was too big, and none too small. I left the remaining limbs in the yard a while longer, then discarded them. The remaining limbs went everywhere with “Ellen”. She carried them all in at night, so I asked her to carry them out to the yard in the morning so I could clean the barn.

Each morning when I asked “Ellen” to “pick up – move up”, she would carry each limb outdoors as I walked with her. She would even go get the limbs if I asked her to “go pick up – come here” while I waited in the yard. I wanted to use this behavior to show visitors how intelligent she was. I felt that visitors would enjoy seeing “Ellen” carrying the limbs. In addition, she would be doing something she liked to do. There were two large tree guards in the outdoor exhibit that I thought would be useful in creating a demonstration showing off “Ellen’s” creativity. I placed a limb at 15-foot intervals around the farthest tree guard. Then “Ellen” and I walked to the point farthest from the tree guard. I asked “Ellen” to “go pick up – come here,” hoping she would go get a limb. She immediately took off to get one as I felt she would, but she surprised me when she walked backward to pick up a limb and forward to bring it to me. She walked backward all the way around the tree guard to get each limb, then forward around the guard to bring it to me. Visitors really got a kick out of watching her retrieve the limbs. Many visitors asked me if it was hard to train her to do the trick. I said, “No, she taught me the behavior. It’s not a trick, it’s something she likes to do, so I left it in the program.”

I think it’s fair to ask animals to do things for us. By the same token, we must allow our animals to do things that are pleasurable to them. By leaving our minds open to this possibility, we can identify behavioral preferences, encourage them, and make them a part of our regular routine. Letting our animals enjoy these pleasures is a wonderful gift we can give them.

### **Develop a Relationship with Your Relief Keeper**

One of the most important things you can do for your animals is to cultivate a good working relationship with your relief keeper (RK). It means consistent care for your animals on your day off

and it will save you time on your first day back to work. Here are some suggestions that will help you establish this relationship.

1. Have your RK work with you for a few days to see how you work with and relate to your animals. If both you and your RK are similar in your mannerisms and the way you work around the animals it will have a calming effect on them and reduce their stress.
2. Share the ways you have developed to be more efficient on the job. It will save your RK time, which means that much more time for the animals.
3. Be sure to give your RK copies of your work routine procedures, animal care program and animal profiles. Have a meeting to go over these programs to discuss any questions, suggestions or possible problems.
4. Discuss each animal's "species typical" and individual behavioral profile. There should be no surprises for the RK regarding an animal's unusual problems or possible aggression. Let the RK know your special way of handling problem animals, or animals that may be uncooperative. The more the RK knows about each animal, the less the likelihood of an accident or injury.
5. Give your RK a summary of all your enrichment projects, along with instructions for each. Enrichment should not cease just because you are on your day off.
6. Sharing knowledge is essential for maintaining a consistently high level of care for your animals seven days a week. Designate a location to hang a clipboard so you can leave messages for your RK. Nothing is more disturbing than starting work to find major changes, new animals or sick animals no one told you about. Encourage your RK to communicate freely with you.
7. Be sure that all the supplies, tools and food required are immediately on hand for your RK when he or she starts work. Encourage your RK to do the same for you. Time saved means more time for your animals.
8. A keeper—relief keeper relationship should be a partnership on behalf of the animals. Animal well-being is the primary concern, and should take precedence over petty personal differences.

### **Using Interactive Activities with Your Animals as an Enrichment/Educational Tool**

I like to develop interactive programs with as many animals as I can. The animals enjoy these programs and the relationship it creates between keeper and animal makes animals easier to handle. An interactive program involves using treats to train an animal to perform simple behaviors. Visitors love to see the keeper/animal interaction, and they are blown away if they are allowed to participate in some way. I always discuss an animal's unique qualities and intelligence during these sessions. If you like to give tours or classes, interactive programs will make your area one of the most popular places to visit in the zoo.

I have used Reticulated giraffe (*Giraffa camelopardalis reticulata*), square-lipped rhino (*Ceratotherium simum*) and warthogs (*Phacochoerus aethiopicus*) in such interactive programs, just to name a few. Two of the most popular interactive programs were with "Ellen" the elephant. I called these programs "Melons for Ellen" and "The Junior Elephant Keeper Program". Summer is watermelon season in Arkansas. If a visitor, group or school class brought a watermelon to give to "Ellen", I would let them give it to her in the barn with no other visitors present. First, I would give a short talk about elephants and then I let the visitor drop the melon into the food receptacle so "Ellen" could pull it into the large inner stall. I then asked people to guess how she would eat it. Most people said "Ellen" would cram the whole melon into her mouth, thus creating a big mess. They were always surprised when she gently cracked the melon open with her foot. Then, she broke the melon into small pieces so she could savor every bit of it.

The "Junior Elephant Keeper Program" was generally given by appointment only because it took quite a bit of time to perform. Members of grade school classes were allowed to go into the keeper's area of the barn, where they could see "Ellen", but she could not reach them through the bars. I



always kept a large supply of bread or hamburger buns on hand for training and program use. After a short talk I asked the students to line up in single file facing "Ellen", then I gave each student a slice of bread. I instructed the children to ask "Ellen" to "foot-steady". Of course, she did a "foot-steady" with great gusto. She worked cheap. I asked "Ellen" to "alright", then that child would give her a slice of bread. After the last child fed "Ellen" I proclaimed them all "Junior Elephant Keepers." I know it was a hit with the children because both teachers and parents said the children talked about their experience for days. "Ellen" appeared to enjoy it as well. The minute I opened the door to the barn and walked in, "Ellen" would rush into the barn, ready for treats.

### **Break Through with Your Animals**

There is one thing that inhibits normal behavior in all animals, even in man. It is fear, real or imaginary. Of course fear in our animals is not as common as it used to be because most of our animals are born in the zoo. Nevertheless, fear can be a problem if it is present and nothing is done to correct it. Animals that are flighty and fearful are more likely to injure themselves, and the continual stress can lead to a variety of illnesses. In my article about "Breaking Through" with your animals, I recommended becoming friends with them, or at least reducing their flight distance to zero. Considering the number of animals that are now benefiting from their keeper's training or conditioning programs, I feel even more strongly about "Breaking Through" with your animals. This process reduces stress, lessens the chance of injury, and facilitates procedures such as treatment of injuries, drawing blood and examinations. It is also a great benefit when handling emergencies. In "Breaking Through", I gave some suggestions that would help a keeper manage animals in a safer, more efficient manner. Due to the current great interest in animal training, I believe some of these suggestions are worth repeating.

1. **Talk To Your Animals:** Our voice is one of the most effective tools we have. A voice can calm, reassure, encourage, coax, reward, alert, and express our feelings. It transcends barriers, allowing us to impact our animals' lives in a positive way without touching them.
2. **Learn Your Animals' Primary Sensory Modes:** An American Indian saying proclaims, "A feather fell from the sky. The eagle saw it, the deer heard it, the bear smelled it and the coyote did all three." American Indians knew the importance of knowing how each animal perceived its world, because Indians had to live in that world with them. How you look, smell and behave is important to your animals, so you should consider the primary sense each animal uses to recognize and evaluate both you and its world.
3. **Develop Extensive Profiles of Your Animals:** Your animals are not the programmed automatons that scientists once believed they were. Animals do have a natural behavioral fingerprint, but they also have many individual characteristics that must be considered. Profiles can chronicle "Break Throughs", idiosyncrasies, likes and dislikes and the special routines which make your animals easier to work with. Developing profiles also makes it easier to identify and verify new behaviors. The longer you work with an animal, the more likely you are to discover new behaviors that can be encouraged, and therefore enrich its life.
4. **Be Consistent:** Animals strive for a balance in their lives. Sudden changes are a cause for concern that could lead to trauma in flighty or delicate animals. There is nothing wrong with making changes in a routine, but when you do so, make them carefully.
5. **Learn What Your Animals Are Trying to Tell You:** Always maintain an open mind and train yourself to recognize new behaviors, likes and dislikes or things that are stressful. Discovering the most insignificant new thing about your animals could lead to major improvement in your animal care program.
6. **Create Safe Spots:** A "safe spot" is a place in a yard, barn or room where an animal can stand or lie down during cleaning or maintenance. They know they will not be bothered while they are there, and they know that when you want them to move to the next "safe spot", you will ask them to move. This sort of communication and cooperation reduces stress and builds trust. See "Safe Spots Safe Places and Behavior Consistent Routines (Techniques for Working with Flighty Ungulates)" (AKF April 1992).

7. **Create a Safe Place:** A “safe place” differs from a “safe spot” in that once an animal is in a “safe place” it is not bothered or asked to move. A “safe place” can be a room, stall or enclosure in a yard or building. Be sure to prepare a “safe place” ahead of time so that you won’t have to disturb the animal once it is “safe”. I used “safe places” during emergencies, pending birth or animal illness. I taught the animals to run into the barn or building by using voice commands and behaviors the animal learned to recognize and respond to. i.e., my “Go to the Barn” behavior or my “Move to the Next Spot” behavior.
8. **One Breakthrough Leads to Another:** The first and most important breakthrough is the elimination of fear and distrust. This releases normal behaviors so an animal is capable of living a more normal life. This can lead to some startling changes in your animals’ behavior. Recognizing the sequential nature of “Breaking Through” will prepare you to take advantage of and encourage the beneficial things it will mean for your animals.

### **Acknowledge Your Animal’s Innate Creativity and Curiosity**

Animals possess an innate creativity and curiosity which is revealed only if they are healthy and stress-free. It must be nurtured and encouraged by introducing animals carefully to many new things that they can explore. A rich, varied environment that meets an animal’s normal needs is essential, but, in addition, introducing a variety of unknown objects and materials may meet an animal’s personal behavioral needs. This curious and creative behavior, no doubt, is the stuff of “natural selection”. It is the force that stimulates animals to seek new food sources, explore new territories and discover new behaviors that allows them to adapt to a specific environment more effectively than their competitors.

An animal’s innate desire to explore and investigate its environment is the result of a strong will to live. This is what the singer Jewel refers to as “The Flame” in her great album “Spirit”. I observed a stark example of the will to live during the mid 1980’s in a small zoo, and it has remained with me ever since. It involved a pair of African Crested Porcupines (*Hystrix africae-australis*) living in a sterile cage. The cage was approximately 3.5ft. X 8.5ft. (1.06m x 2.59m). There was nothing in the display that resembled the animals’ natural habitat in any way. Four walls, a floor and a ceiling were supposed to be home. The walls were covered with wood planks. One of the porcupines had removed a knot from one of the boards and was playing with it. The porcupine picked the knot up in its mouth, tossed it, then chased after it. Once the porcupine captured the knot again it would bat it around with its forepaws, then toss it again. One thing this wonderful animal made very clear was that its *Flame* was burning bright. I can only imagine what this animal’s life *could* have been if it was in the care of a motivated keeper.

### **Night Staff and Behavior-Based Care**

If you can involve the Night Staff (NS) in your new program in any way, your chances of success are greatly enhanced. They can help expand your animals’ day and develop programs during the lost hours when you are not there.

I have worked in several zoos where the NS was used to performing animal care activities. They put animals up late, gave late feedings, prepared and delivered diets and cleaned pools and public areas. I would think the NS would be eager to help with an animal care program that allows the animals to live a more normal and productive life. Here are some suggestions which may help you include the NS in your Behavior-Based Animal Care Program.

1. Plan a meeting with the NS to present your program. Hand out copies of your program. Discuss the benefits that the program provides for your animals.
2. Identify the ways the NS can participate in this program.
3. Outline your goals and objectives and discuss them with the NS.
4. Establish lines of communication with the NS to share progress, changes in behavior, new behaviors, the next phase of the program, etc.

5. Share all of your animal profiles.
6. Spend some evenings working with the NS to help implement the program.
7. Possible Program Features:
  - Put animals up late.
  - Feed animals late.
  - Provide enrichment early mornings and evenings.
  - Make observations of animal behavior when you are not there in the evening.
  - Make recommendations for improvements and additional programs at night.
  - Monitor and evaluate new and more natural environments for small animal buildings, nocturnal exhibits and large animals left outdoors to replicate a more normal life.

I hope this article has inspired and excited you about the possibilities still available in zoo animal care. Animal keeping is still in its infancy. The behavioral aspects of animal care, and developing the lost 16 or 17 hours of our animals' lives is the future of animal care. It is an area of animal care that is wide open to those of you who want to blaze new trails, make new discoveries, and, best of all, make life better for your animals.

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## **2003 International Enrichment Conference** **Scheduled in South Africa**

The Johannesburg Zoo, South Africa, is proud to announce that will be hosting the Sixth International Conference on Environmental Enrichment.

This exciting and informative conference will be held from 2 – 7 November 2003. The provisional conference attendance fee is US\$250, but this will be confirmed and reduced based on price and currency fluctuations towards the end of 2002. South Africa is an exciting destination that boasts a number of world class zoos as well as a plethora of extracurricular activities ranging from phenomenal game parks to peaceful wine routes. Please ensure that you make your travel arrangements early to obtain the most reasonable flights from your country. Please bear in mind that South Africa is a cost effective destination to travel to and is well worth the visit to this amazing part of the world. Further information can be obtained from our website which will be updated regularly to keep you posted [www.jhbzoo.org.za](http://www.jhbzoo.org.za).

For further information please feel free to contact Mathew van Lierop who will be coordinating the conference at +27 11 646 2000 ext 233 or at [mathew@jhbzoo.org.za](mailto:mathew@jhbzoo.org.za)

# ***ELECTION.....2003***

Yes! It is once again time to elect Board of Directors for the Association. There are four positions up for election. Those positions are held by Jacque Blessington, Kevin Shelton, Jan Reed-Smith and Linda King whose terms end with the 2003 Conference. New Board members will serve a four-year term from the close of the 2003 National Conference until the conclusion of the 2007 National Conference. If you or any one you know would like to be nominated for these positions please send your forms to Sheri Leavitt, NEC Chair, UTMB Galveston, 301 University, Galveston, TX 77555-0621; or fax them @ 409-772-8453. All nominations need to be received **no later than February 28, 2003**. For information or questions, please call me at 409-772-9977 or 281-534-4224. If you have ever wanted to make a difference in AAZK, now is the time to step up to the plate and give us your best.

## **Duties of the Board of Directors**

For a more detailed explanation of the expanded duties of the Board, refer to the By-Laws (available upon request from Administrative Offices in Topeka, KS).

- 1) Select, appoint or remove officers, committees, agents and employees of the Association, including - prescribing powers and duties.
- 2) To control and manage the Association and its property, passing upon acquisition and disbursements with approval of a majority of the Board.
- 3) To formulate policies, rules and regulations in accord with the Constitution & By-Laws.
- 4) To uphold the Constitution of AAZK and the policies of the Association.
- 5) To appear at Board meetings, to accept Board assignments and to devote the time to communications pertinent to all Board business, including answering correspondence promptly and efficiently.

## **Qualifications for Nomination**

- 1) Nominee must be a Professional Member of AAZK, Inc. in good standing and must have been a member of the Association for at least one year.
- 2) Nominee must be presently employed as an animal keeper/attendant, veterinary technician, research technician or other personnel directly connected with the care, feeding and educational display of captive wildlife in a recognized zoological park, aquarium, animal reserve or other animal care facility in the U. S. or Canada and must have been in the zoological field for at least two years.

# Nomination Procedure

## 1) Nominator Form:

- a. List the name of the nominee, phone, address, and institution.
- b) State in 150 words or less the reason(s) why the nominee warrants election to the Board of Directors.
- c) Nominator signs forms and mails to NEC Chairperson.
- d) Notifies nominee that they nominated him/her for the Board of Directors.

## 2) Nominee Biographical Form:

- a) Professional background: places of employment, length of service, titles.
- b) Membership in AAZK: National and local Chapters, number of years, offices held, involvement in activities.
- c) Educational background.
- d) Membership in Affiliate Organizations: (AZA, CAZPA, Audubon, etc.)
- e) State in 500 words or less why you would like to be on the BOD and any other pertinent information. (optional)
- f) References (one or two)
- g) Nominee signs forms and mails to NEC Chairperson.

**NOTE:** Candidate is ineligible for nomination if **both** the nominator and nominee biographical **forms** are not **complete** and **returned** to the NEC Chairperson **by 28 February 2003** . Send to: Sheri Leavitt, NEC Chair, UTMB Galveston, 301 University, Galveston, TX 77555-0621; or fax them @ 409-772-8453.

# **Nomination Form for** **AAZK Board of Directors**

## **Qualifications for Nomination:**

- 1) Nominee must be a Professional Member of AAZK in good standing and must have been a member of the Association for at least one year.
2. Nominee must be presently employed as an animal keeper/attendant by a recognized zoological institution or aquarium in the U.S. or Canada and must have been in the zoological field for at least two years.

1. Name of Nominee:

Address:

Phone:

E-mail:

Institution:

Director:

2. State in 150 words or less the reason(s) why the nominee warrants election to the AAZK Board of Directors.

3. Signature of Nominator: \_\_\_\_\_

4. Form must be received by the NEC Chairperson by 28 February 2003. Send to: Sheri Leavitt, NEC Chair, UTMB Galveston, 301 University, Galveston, TX 77555-0621; or fax them @ 409-772-8453.

# **Nominee Biographical Form** **for AAZK Board of Directors**

**1. Name:**

**Address:**

**Phone:**

**E-mail:**

**PLEASE LIST THE FOLLOWING INFORMATION**

**2. Professional Background: (places of employment, length of service, titles)**

**3. Membership in AAZK:**

**a) National: number of years**

**Activities:**

**b) Local Chapter(s): number of years, offices held, involvement in activities.**

**4. Educational Background:**

**5. Membership in Affiliate Organizations (AZA, Audubon, WWF, CAZPA, etc.)**

**6. State in 500 words or less why you would like to be on the BOD and any other pertinent information (use additional paper if necessary)**

**7. References (one or two); give name, address and phone number where they can be reached:**

**8. Nominee's Signature: \_\_\_\_\_**

**9. Form must be received by the NEC Chairperson by 28 February 2003. Send to: Sheri Leavitt, NEC Chair, UTMB Galveston, 301 University, Galveston, TX 77555-0621; or fax them @ 409-772-8453.**



# Legislative Update

*Compiled by Georgann Johnston  
Legislative Advisor  
Sacramento, CA*



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## **Humane Society of the United States Issues Annual “Humane Scorecard”**

The HSUS has again issued its “Humane Scorecard” which tabulates the voting records of U.S. Senators and Congressional Representatives on issues related to animal welfare, the Endangered Species Act, factory farming, and a variety of other topics. This report covers the 107th Congress and the list below highlights some of the items included.

**Animal Welfare Act Enforcement.** Congress approved an increase of \$5.15 million to better enforce this law to insure minimum humane standards of care for millions of animals at approximately 100,000 sites including puppy mills, laboratories, zoos, circuses, and airlines.

**Humane Slaughter Act Enforcement.** Secured \$1 million to begin addressing the USDA’s disregard of the law requiring that livestock be rendered unconscious before slaughter.

**Multinational Species Conservation Fund.** Programs to protect certain endangered wildlife and/or their habitats received a total of \$7 million in funding to assist local conservation efforts primarily in Africa and Asia. Target animals include elephants, rhinos, tigers, great apes, and neotropical migratory birds.

**Chimpanzee Sanctuaries.** An additional \$5 million appropriated to begin building a national chimp sanctuary authorized by the prior session of Congress. This will be for chimps formerly used in biomedical research.

**Non-animal Test Methods.** Congress directed the Environmental Protection Agency to use \$4 million of its budget on the research, development, and validation of non-animal alternative test methods that reduce animal suffering and can be less costly and time consuming.

**Farm Bill.** HR 2646, a massive bill setting farm policy for the next six years became a vehicle for consideration of animal protection issues but those provisions did not make it into the final law enacted by Congress.

**Animal Fighting.** Law to prohibit interstate transportation of birds for cockfighting with an increased penalty of \$15,000 per violation. On the negative side, reduced the crime from a felony to a misdemeanor.

**Bear Parts Trade.** While the Senate adopted legislation prohibiting interstate or international shipment of bear gallbladders and bile, the House eliminated these provisions from the Bear Protection Act (HR 397).

Legislation still pending for action in the upcoming year include the following:

**Canned Hunts.** S 1655/HR 3464 would prohibit interstate or foreign commerce of captive exotic animals to be shot for entertainment or trophies. Canned hunt operations hold animals such as African lions, giraffes, and antelopes within fenced enclosures offering their “clients” a guaranteed kill (under a “no kill-no pay” arrangement).

Polar Bears. HR 3932 would prohibit the use of polar bears in travelling shows and circuses.

Whales. Senate and House Resolutions are proposed to reaffirm the U.S. commitment to oppose any commercial whaling and express opposition to the killing of whales under the guise of “scientific research”.

Mourning Doves. A House Resolution has been proposed to change the Migratory Bird Treaty Act to extend the hunting season for mourning doves into their nesting period. This was adopted by a voice vote in the house but no action has taken place yet in the Senate.

Antibiotic Overuse. S 2508/HR 3804 would stop factory farms from using massive quantities of antibiotics to compensate for inhumane conditions leading to disease. Factory farms routinely mix antibiotics into the feed of healthy pigs, cows, chickens and turkeys to speed growth and prevent disease in their unsanitary, overcrowded, and stressful warehouses. Such “nontherapeutic” use in farm animals accounts for an estimated 70% of all antibiotic use in this country contributing to the growing problem of antibiotic resistance.

If you want more information on your particular Congressional representatives voting record on these and other animal issues, log on to the HSUS web site at [www.hsus.org](http://www.hsus.org) or call the HSUS for a copy of the Humane Scorecard at (202) 955-3666. *Source: The Humane Scorecard, published by HSUS and The Fund for Animals, 2002.*

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### **UN Body Rejects Trade Ban on Black Sea Dolphins**

A proposed ban on the trade of Black Sea bottlenose dolphins, which are sought after by the aquarium industry worldwide, was rejected at a U.N. meeting on endangered species, organizers said. Georgia, one of six countries with a Black Sea coastline, had asked the 160-nation Convention on International Trade in Endangered Species (CITES) to outlaw all trade in the bottlenose to prevent it from being wiped out.

The proposal, one of the first to be considered at the meeting that was held during the first two weeks of November, failed to win a two-thirds majority vote needed for approval due to different interpretations of the limited scientific data available on the species.

Bottlenose dolphins, also found in other water bodies, are in demand from amusement parks and circuses because of their playful acrobatics and receptivity to training. Trade in the Black Sea specimen has been curtailed under CITES since 1979. But conservationists argue those restrictions are not enough; saying increased trade in live dolphins from the Black Sea since 1990 threatens their survival. That risk is aggravated by the dolphins’ slow reproductive cycle and polluted habitat, they say. “The situation in the Black Sea is really quite a desperate one. A degraded population is now being strongly affected by a highly degraded environment,” Mike Simmonds, Director of Science at the Whale and Dolphin Conservation Society (WDCS), said before the vote.

Russia, the world’s top exporter of the dolphins, led opposition to a ban, saying its studies show the population is thriving and unharmed by pollution and trade. Environmentalists say research shows bottlenose dolphins in the Black Sea are genetically distinct from those found in the Mediterranean Sea and North Atlantic and therefore merit special protection but Russia and others question those findings. There is also disagreement on the size of the population, which Russia believes is stable. “Russian scientists did a survey of fishermen and sailors on the Black Sea. The result is that 70% of Russian people are saying the population is increasing,” said Valentine Iluashenko, a Russian delegate to CITES.

The Black Sea dolphins, which form small social units and breed at about the same rate as humans, were depleted from heavy hunting from the late 19th Century until the 1980s, first for meat and later for their oil, Simmons said. Now, chemical contaminants dumped into the enclosed sea are also killing the marine mammals. About 120 live Black Sea bottlenose dolphins were traded internationally

- at about \$20,000 each and sometimes via Internet - between 1990 and 2001, conservationists say.  
*Source: Reuters News Service, 11 November 2002*

### **Ivory Ban Has High Cost for Rural Africans Resurgent Elephants Trample Harvests**

There are chubby elephant footprints all over the farms of rural villages that ring Tsavo National Park in southern Kenya. The elephants have not only destroyed \$30,000 worth of food, but have also killed four people since April, causing schools in the area to close and local leaders to urge villagers to arm themselves against marauding wildlife.

"The elephants have spoiled everything," one resident said as she walked through her shredded fields. "Why can't we get rid of some of them?" Her question is the focus of an emotional and complex debate halfway around the world this week as 160 countries meet in Santiago, Chile, for the U.N. Convention on International Trade in Endangered Species of Wild Fauna and Flora, known as CITES. The southern African nations of Botswana, Namibia, Zimbabwe, Zambia and South Africa are pushing for revision of a 13-year-old global ban on the sale of ivory that would allow them to sell stockpiles of elephant tusks worth millions of dollars. And while the proposal involves mostly the tusks of elephants that died from natural causes, some rural Africans are wondering whether it's time to allow some of the continent's larger herds to be thinned out.

The global appetite for ivory, prized for its buttery, pearl-like luster, long ago made the elephant a popular target for poachers who kill the animals and sell their tusks. Employing anything from simple wire snares to poisoned arrows to AK-47 rifles, they recently were killing 50,000 to 150,000 elephants a year, carving the tusks from their faces and leaving the carcasses to rot in the sun. Since the start of the 20th century, when an ivory bracelet priced at a hefty \$300 rivaled the status of a diamond ring, the number of elephants in Africa dwindled from an untold abundance to an estimated 1.3 million in 1980 to as few as 600,000 in 1989. But after conservationists, mostly from Europe and the United States, launched a campaign to save the elephants, the sale of ivory was banned. Estimates by wildlife groups indicate the African elephant population continued to slide, reaching 300,000 in 1998, but has since climbed back to 600,000.

The elephant resurgence has forced African governments to make difficult choices about whether to resume the ivory trade — this time in a carefully controlled way that would keep revenues out of the pockets of poachers and funnel it to poor villagers. In 1997, CITES agreed to allow the first exception to the ivory sales ban, permitting Botswana, Namibia and Zimbabwe to sell Japan about 110,000 pounds from existing legal stocks of raw ivory. The deal, which was completed two years later, netted \$5 million that was used for elephant conservation in those three countries. This year, the same three countries are being joined by South Africa and Zambia in requesting another one-time sale, to be followed by annual sales governed by strict quotas. Many wildlife advocates argue that the elephants' comeback is far from complete and that preventing illegal poaching would be impossible. Kenya and its East African neighbors support continuing the ban, as do West African countries and the United States.

No one involved in elephant management programs likes to talk about culling and selling ivory, said Pieter Botha, deputy director of trade and regulation for South Africa's Department of Environmental Affairs and Tourism. "We are nature conservationists by heart, and it's a traumatic experience," he said in a telephone interview. "But sometimes it has to be done for all sorts of reasons." Elephants nearly disappeared from South Africa long ago. The discovery of gold and diamonds attracted Europeans — including hunters — in droves and by 1910, there were 120 elephants in the country, Botha said. Now there are 13,000 and their numbers are growing by seven percent a year, he said. As South Africa and its neighbors struggle to provide public education and basic health care to their citizens, the South African government has 30 tons of ivory in storage, most of it taken from elephants that died from natural causes, Botha said. Selling that stockpile, he said, would bring in about \$3.5 million. "At some point, you do reach the maximum amount that the environment can handle," Botha said. "Here they are eating our trees and hurting the birds that nest there. There has to be a

balance. Ivory is a natural product that is a good resource that could be managed to help other conservation projects.”

But allowing even the most limited sale of ivory would revive a market for the material that the CITES ban has all but eliminated, said Esmond Martin, who investigates the illegal trade of ivory for conservation groups. If ivory again becomes a legally traded commodity, he said, elephants will again be killed in huge numbers. Even with the ban in place, the demand for elephant tusks in Asia is huge. In August, six tons of ivory from Zambia was confiscated in Singapore. A month later, Chinese authorities seized three tons of ivory shipped through Kenya. “There are already illegal sales in Congo, in Sudan, in Somalia, all places where there is war and no work,” said Martin, who has traveled the globe producing reports on ivory sales. “If they make this legal, everyone will start killing elephants.”

In Kenya, the safari industry reaps millions of dollars from foreign tourists eager to see wildlife, but the elephant population stands at about 30,000 elephants — less than a quarter of what it was 30 years ago. Officials here say they oppose legalizing the sale of ivory in any way. “If ivory is legalized, we stand to lose all of our elephants,” said Zipporah Musyoki, head of education for the Nairobi-based African Fund for Endangered Wildlife. “You go to someplace in northeastern Kenya and an elephant is killed every day. Imagine if ivory was legal. There would be constant killing in order to sell the ivory.” At Nairobi Orphan Park, where the Kenyan Wildlife Service brings young elephants whose mothers have been killed, officials said a rise in the number of boarders reflects anticipation among poachers that the CITES ban will be lifted. So far this year, 71 elephants have been poached in Kenya, compared with 57 in 2001.

The most recent arrival to the park is an 11-day-old elephant from Meru, Kenya, whose mother had been poached days after giving birth. Park owner Daphne Sheldrick said the elephant — whom she named Wendi — has a slim chance of survival since she was unable to nurse from her mother, whose milk provides immunity from common diseases and infections. But in Voi, about 150 miles southeast of Nairobi, there is little sympathy for elephants, orphaned or not. Many villagers depend on subsistence farming. A large influx of Somali immigrants has strained food and water supplies in an area where most people do not have piped water or electricity. The Voi District Hospital is overloaded with children sickened by polluted water. To most villagers in Voi, saving elephants seems almost ludicrous. “What will my family eat?” asked Malanga Kisombe, a farmer who stood barefoot amid crops trampled by elephants, his nerves frazzled and his eyes glowing red from a night spent without sleep. “The world values elephants more than they care about people.”

James Perrio, the community wildlife officer for Kenyan Wildlife Service, said his organization is trying to fix the problem by dispatching rangers to drive the elephants back into the Tsavo National Park and by installing more electric fences around nearby villages. “We understand it is frustrating and there is hostility,” said Perrio. “That’s why the only thing we can do is encourage the humans and the wildlife to live together.” When humans and elephants come into conflict, Perrio said, the elephants aren’t always the ones at fault. While Kenya’s elephant population has doubled in the 13 years since the ivory ban was imposed, the human population has risen from 21 million to 34 million, and hungry people are constantly on the move, looking for land to farm. As a result, “many humans are now living where elephants used to be. So when farmers are planting maize and crops, the elephants are attacking,” Perrio said. Rather than advocate selling ivory to repay farmers for destroyed crops, the Wildlife Service has a different idea: persuading farmers to give up their crops and cash in on eco-tourism by selling crafts to tourists and helping care for the animals that attract them.

*Source: Washington Post Newspaper 10 November 2002*

# The Effects of Foraging Bins on Callitrichid Behavior

By Victoria Virkaitis, Primate Keeper  
The Philadelphia Zoo, Philadelphia Zoo, PA

Callitrichids spend much of their day in the wild foraging for food. In captivity, many institutions use various feeders to help encourage these natural foraging behaviors in their animals. At the Philadelphia Zoo, feeding protocol requires callitrichids to be fed at least two times daily with the first feeding of a canned complete food, ad lib and easily assessable, no later than 0930h and all their fruit with canned complete food in the afternoon no later than 1500h. Their fruit is never fed in the morning to encourage the animals to eat more of their complete food. This feeding method encourages healthier animals but makes it more difficult to give the animals foraging opportunities for most of the active part of the day. To address this challenge the Philadelphia Zoo began using “foraging bins” to encourage foraging throughout the day, at will and always available to the animals. This study was conducted to assess the effects of foraging bins on callitrichid behavior.

## Method

### Subjects

The subjects were a breeding pair (1.1) of off-exhibit bicolor tamarins (*Saguinus b. bicolor*) and a family group of golden-headed lion tamarins (*Leontopithecus Chrysomelas*) of 1.1 adults, 1.0 subadult, and 2.0 juveniles.

### Apparatus

The foraging bin is a common plastic cat litter pan. Various substrates are mixed together in the bin. In this experiment, an average of 15 cups of Bed-o-cob®, 20 cups of pine shavings, and eight cups of nutshells were used. The main criterion was to have the substrate be at least 4cm (1.57 in.) deep within the bin. This was placed on a shelf 1-2m (3.28-6.56 ft.) off the ground. The bins are never placed below 1 meter in the enclosure. Everyday the bin was removed for enclosure cleaning between 0900-0930h and replaced with the groups' allotment of a mixture of Cheerios<sup>®</sup> and mealworms mixed in. The bins were not touched by the caretaker for the rest of the day.

### Observations

Observations were taken from ~1000h – Noon and ~1300h – 1500h. Samples were taken every 30 seconds for 15 minutes at a time, alternating between the two groups. Additionally, “between interval behaviors” were noted if they occurred but not the quantity of occurrences for both of the bicolor tamarins and the 1.0 adult golden-headed lion tamarin. The animals have had access to the foraging bins intermittently for the past year, but they were removed for two weeks prior to the “pre-foraging bin” observations and replaced again for two weeks prior to the “post-foraging bin” observations. Samples were taken for three non-consecutive days for both the “pre” and the “post” observations. The choice of days was determined by the observers schedule availability and the weather (only sunny days were chosen).

Results

Bicolor Tamarin Totals

	<u>Pre-foraging bin</u>	<u>Post-foraging bin</u>	<u>Diff.</u>
Rest	42.4%	30.7%	-11.7%
Stationary	10.2	9.0	-1.2
Locomoting	25.1	18.3	-6.8
Forage	2.2	25.7	+23.5
Eat	2.9	4.2	+1.3
Groom	5.2	0.6	-4.6
Play	0.0	0.3	+0.3
Nest box	5.7	5.3	-0.4
Sunbathing	5.8	5.6	-0.2

**Between Interval Behaviors-**

	<u>Pre</u>	<u>Post</u>	<u>Diff.</u>
Vocalize	80.1%	61.8	-18.3
Scratch	23.2	17.7	-5.5
Head Shake	0.7	0.1	-0.6
Scent marking-			
Pull-rubbing	1.4	2.9	+1.5
Sit-rubbing	3.1	3.6	+0.5

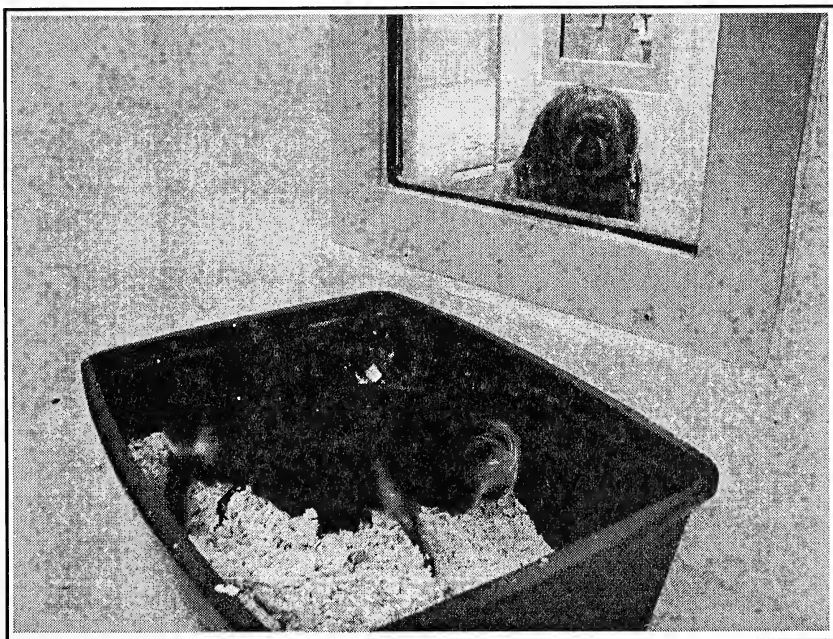


## Golden-Headed Lion Tamarin Totals

	<u>Pre-foraging bin</u>	<u>Post-foraging bin</u>	<u>Diff.</u>
Rest	36.2%	34.2%	-2.0%
Stationary	8.4	7.5	-0.9
Locomoting	15.4	12.7	-2.7
Forage	5.3	22.7	-17.4
Eat	3.2	4.1	+0.9
Groom	14.2	7.3	-5.9
Play	6.2	2.2	-4.0
Nest box	8.9	2.8	-6.1
Sunbathing	2.7	5.9	+3.2

### GHLT Between Interval Behaviors

	<u>Pre</u>	<u>Post</u>	<u>Diff.</u>
Vocalize	33.6%	19.6	-14.0
Scratch	21.8	46.7	+24.9
Scent marking-			
Ano-genital	0.2	0.0	-0.2
Sternal	0.2	15.6	+15.4
Muzzle	0.7	0.4	-0.3



## **Discussion**

The results from the observations of the bicolor tamarins show an increase of foraging of 23.5%. An increase in foraging was expected considering that the animals now had something to forage in, but this increase is quite significant. The amount of foraging observed in the AM samples was slightly more than the amount of foraging observed in the PM samples. However, they did continue to use the foraging bins throughout the day, not just a short period of time after they had been replaced in the enclosure. As foraging increased, the amount of time spent grooming, resting, and locomoting decreased a significant amount. Also, as foraging increased, the amount of time spent sunbathing increased. It was also noted from the observations that the animals tended to go in repeated bouts of foraging followed by sunbathing.

The "between interval behaviors" of the bicolor tamarins showed that within-group contact vocalizations and scratching decreased significantly while pull-rubbing (supra-pubic) scent marking increased. It is possible that the decrease in vocalizations and scratching may infer a decrease in stress-related stereotypic behaviors but further studies such as monitoring cortisol levels would be necessary before that conclusion could be made. The increase of scent marking may also suggest an increase in natural marking behavior of marking food locations more heavily. Again, more research and observations are needed before this conclusion can be made.

The results from the observations of the golden-headed lion tamarins show an increase of foraging of 17.4%. As with the bicolor tamarins, an increase in foraging was expected considering that the animals now had something to forage in, but the increase is quite significant. The amount of foraging observed in the AM samples were approximately the same as the amount of foraging observed in the PM samples. The tamarins continued to use the foraging bins throughout the day, not just a short period of time after they had been replaced in the enclosure. As foraging increased, the amount of time spent in the nest box, playing, grooming, resting and locomoting decreased a significant amount. Similarly to the bicolor tamarins, as foraging increased so did the amount of time sunbathing. Within-group contact vocalizations decreased significantly while scratching and sternal scent marking increased. It may be possible that the same reasoning may apply to the golden-headed lion tamarins as the bicolor tamarins with vocalizations decreasing and scent marking increasing but it is interesting that while scratching decreased in the bicolor tamarins it increased in the golden-headed lion tamarins. There may be a simple enough explanation such as dust or debris from the foraging bins is more irritating to the golden-headed lion tamarins than to the bicolor tamarins or maybe scratching is more of a stress-related behavior in the latter, whatever the reasoning, more research will need to be done before any conclusions can be made.

All individual tamarins from both species showed an increase in the amount of foraging at different heights within the exhibit. This implies that the increase in foraging activity is not limited to just foraging within the bin. It appears to have encouraged the animals to explore various areas within their enclosure looking for food. This has occurred even though the caretaker has not shown any extra attention to other areas in the exhibit.

## **Conclusions**

In the wild, callitrichids spend a majority of their day foraging for food. In captivity they are usually offered feeders during feeding times but are often not offered stimulating continuous foraging opportunities throughout the entire day. A goal of this study is to assess if the animals are using the foraging bins throughout the day or are they using the bins for only a short period after they have been offered. These data support that all of the tamarins are using the bins throughout the day at will, not only giving them continuous opportunity to forage but also offering them choice of what they would like to do, a basic concept often considered when assessing animal psychological welfare. Overall, this has enabled the callitrichids to spend their day in a more naturalistic behavioral routine. Also, a goal of this study is to observe if the use of the foraging bins affects other behaviors within the group. It decreased within-group vocalizations in both groups but increased some types of scent marking.



Overall, the use of the bins has not only shown benefits for the animals but has been widely accepted by the caretakers. The materials needed are very inexpensive and easily available at most institutions where these animals are housed. Many different substrates can be used besides ones used in this experiment. The Philadelphia Zoo commonly rotates the substrate and also includes pinecones, shredded paper, small boxes, hay, dried cornhusks, and many other various materials. The amount of time and effort involved from the caretaker is minimal encouraging continuous use. If placed in a naturalistic enclosure a dark colored bin with cork bark attached to the outside of it or a wire mesh with leaves interwoven can be easily and inexpensively made to cover the appearance. It can then be hung anywhere within the branches, just so long as it is level so the mealworms or other food items are not encouraged to collect within a corner.

Many more questions have developed as a result of this study. Do multiple foraging bins make a difference? Does the height of the bin in the enclosure change the amount of use? Is there a difference if the same substrate material is used vs. mixed substrates? Which is the most effective? Do periods of time without the bins make a difference in effectiveness of the bins? How much will the answers to the questions vary between different species of callitrichids? Many more studies will need to be done. This study has shown that foraging bins do affect the behaviors of callitrichids in a positive direction and hopefully foraging bins will be accepted and readily used as an additional source of enrichment at more institutions housing callitrichids.

*All photos taken by Victoria Virkaitis*

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# REMINDER

## Three Types of Data Transfer Forms Available from AAZK

Just a reminder that three different types of data transfer forms are available to requesting institutions from AAZK at no charge. These forms are designed to be used whenever an animal is shipped from one facility to another so that important information on that animal can be passed on to the receiving keeper and veterinary staffs.

The following forms are available by contacting Barbara Manspeaker at 1-800-242-4519 (U.S.) and 1-800-468-1966 (Canada), or by emailing your request to [aazkoffice@zk.kscoxmail.com](mailto:aazkoffice@zk.kscoxmail.com)

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These forms are provided free of charge as a professional courtesy of AAZK, Inc. We encourage all zoos, aquaria and other animal care facilities to adopt the use of these forms when shipping animals. We extend our thanks to the following institutions for assisting in the printing expenses for these forms: Columbus Zoo (ADTForm), Arizona-Sonora Desert Museum (EDTForm), and Disney's Animal Kingdom (OCDTForm).

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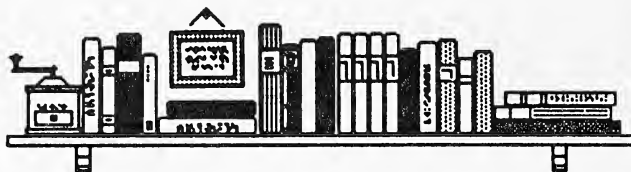
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# Book Review

## **Platypus: The Extraordinary Story of How a Curious Creature Baffled the World**

By Ann Moyal - 2001

Allen & Unwin, 83 Alexander St, Crows Nest, New South Wales, Australia

ISBN - 1 86508 373 9

226 pgs - \$ 29.95 AUD, illustrated

*Review by Sasha Nelson, BS, BA, Postgrad Dip Zool  
Graduate Student, Centre for the Public Awareness of  
Science at The Australian National University, Canberra,  
Australia*

The odd appearance of duck billed Platypi have made them curiosities of science and continue to make them some of the most endearing of earth's creatures. The adults are at least half the size of a beaver — to which they are often compared. The first European scientists to examine a preserved platypus were suspicious that the duckbilled, web-footed mammal was a hoax. Unravelling the mysteries of the strange creature was to become one of the most important scientific endeavours for zoologists according to Ann Moyal, author and acclaimed scientific historian.

The book is appropriately named *Platypus: The Extraordinary Story of How a Curious Creature Baffled the World* for its subject. It describes the period of the first European observations in the late 1700s to the discovery in 2000 of the fossilised bones of what is thought to be a prehistoric forbearer of the platypus. Throughout Moyal argues the importance of the Platypus to the development of scientific understanding. Charles Darwin himself used examples of the platypus and its cousin the echidna to support his theory of natural selection. An accurate description of the unusual animal, which was thought to be an evolutionary link between mammals and birds, helped early taxonomists in their attempts to describe relationships between members of the animal kingdom. After reading Moyal's thoroughly researched book it is easy to believe that if not for the platypus we would have a very different understanding of the relationships between zoological families.

Occasionally the book reads like a who's who of 18th, 19th and early 20th century scientists which can bog-down the narrative flow. However, the exquisite illustrations and pithy descriptions of the debates between the scientists kept me turning the pages. This book is a history and does not dwell on descriptions of current husbandry practises, conservation efforts or behavioural research. You'll need to refer to another book if you want statistics on platypus, life histories, or details of where they can be seen in the wild (in still Eastern Australian waters at dusk by the paths of bubbles that break the surface as they zip around looking for food from the benthos). At the turn of the last page I was impressed with the meticulous historical detail in this handsome book, but I couldn't help thinking that having excluded details of modern research the author has only told part of the *Platypus' Extraordinary Story* — a part definitely worth reading.

## **Neotropical Treeboas: Natural History of the *Corallus hortulanus* Complex**

By Robert W. Henderson - 2002

Krieger Publishing Company, P.O. Box 9542, Melbourne, FL 32902-9542

ISBN#1-57524-038-6

Hardcover, 197 pp. 32 color plates \$44.50US + \$5 shipping via UPS

*Review by Ken Naugher, Assistant Animal Care Mgr.  
Montgomery Zoo, Montgomery, AL*

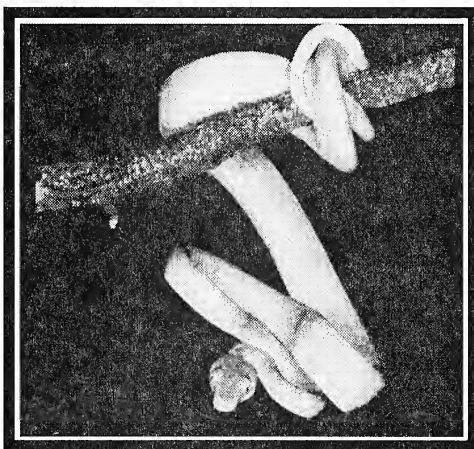
The predecessor to this book Kaleidoscopic Tree Boas also by Dr. Henderson was the favorite book in my collection, until now. Being a "treeboaphile" and knowing that this book has

been in preparation and in the Krieger Publishing "coming soon" catalog for over two years has been agonizing. This book was worth the wait and anxiety.

Dr. Henderson uses a very entertaining and lite-hearted writing style to present massive amounts of data and details about *Corallus hortulanus*. Each chapter begins with a quotation describing encounters with tree boas taken from historical publications; these are very entertaining and insightful. I consider this volume to be the standard reference on *hortulanus*, but Dr. Henderson describes it more accurately and soberingly as a progress report, containing what we do know but more importantly what we do not. While the data presented covers *C. cookii*, *C. grenadensis*, *C. hortulanus* and *C. ruschenbergerii*, Henderson admits that much of the data presented has been from studies of *grenadensis*.

The material presented includes taxonomic keys with holotype information, and species definition, diagnosis and distribution. Also included are range maps and dorsal color / pattern figures for each species. A good description of study localities in the Grenadines is presented and numerous field collection accounts as well. Some of the more technical data presented includes: locality vs. color phase, altitude, annual rainfall, % sunshine and temperature and specimen size, distribution vs. human habitation and foraging vs. SVL, perch height and size, as well as preferred foraging body temperature. Seasonal, short-term and long-term activity patterns are also documented and compared with other snake species.

This book also includes an impressive bibliography of about twenty pages. As Henderson has pointed out, very little is known about neotropical snake populations. This book is an excellent start and describes a fascinating and highly variable species. This book can be used as an instruction manual for future field herpetologists; it also provides us with much data, which could be used to improve the captive husbandry and breeding of this group. I would consider it essential to any animal library.



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## Interaction with Wild Animals: Good or Bad?

By Louis Dorfman, Animal Behaviorist  
International Exotic Feline Sanctuary  
P.O. Box 637, Boyd, TX 76023

Among the most controversial of questions in the animal care world is the question of whether it is progressive and helpful to have a human/animal interactions with wild animals, or just a bad idea. This article will give the author's viewpoint on this question with the caveat that I do not feel I have a monopoly on "truth", and I am very suspicious of anyone who seems to feel he/she does.

I believe it must first be understood that this question falls into the same category as questions such as "Is it good or bad to have a gun for protection? Or "Is religion a good or bad thing for society?" These questions share a common thread: it depends on how they are used. Certainly we humans have a profound ability to corrupt good ideas and goals and turn them into a negative result, if the motivation and intentions of the particular person or group are self-centered and/or driven by desires not beneficial to society or, in this case, the animals affected.

The first question to be asked is "Why?" What is the purpose of any proposed interaction or desire to develop a relationship with a wild animal? Here are a number of constructive reasons for interaction, which I will address individually: 1) for the emotional well being of the particular animal; 2) for health and medication purposes; 3) for safety of both the animals and the caretakers; and 4) for public education and conservation.

### 1. Emotional Benefits

We humans know that our health and general well being is dependent on a number of factors including proper nutrition, proper medication, exercise, and a positive emotional attitude and outlook. Why then do we generally only address an animal's nutrition, medication and habitat? Do we not feel that they would benefit tremendously from a positive mental and emotional outlook? It can be argued that many wild animals have a more highly developed emotional range than humans do and therefore need more attention addressed to this element. I personally have found that there is more difference in personality and characteristics between individuals within a species of big cat than there is between differences among species. We have 68 big cats at the International Exotic Feline Sanctuary, including 21 tigers, 14 lions, and seven leopards. I therefore have had a chance to work with many individuals within a species. They have the same ranges in personality and temperament, as do humans. For example, we have two female Amur leopards (*Panthera pardus orientalis*) that were raised together, live together, and had almost exactly the same environment while growing up, yet they are as different as any two human sisters might be. I spend a great deal of time with them, and their personality differences are more noticeable than are their similarities.

I find that all wild animals with which I've worked benefit from having a human to whom they can look for security, trust and comfort. They are placed in an unnatural setting in captivity, and since they of necessity have to have humans around them, they are much more comfortable and relaxed if they view humans positively. As we all know, all the large big cats, with the exception of lions, are solitary by nature. Yet my experience is that all species of big cats generally seem to crave positive human attention as much as any other being. In fact, for some reason, I find that cougars and leopards – probably the most solitary of cats in nature – are perhaps the most affectionate of cats with a human they trust. We find that our cats benefit in reduced stress levels, comfort around volunteers and employees, and even comfort around tour groups, once they develop a positive one-on-one relationship with a human.

Now that phrase "one-on-one relationship" is critically important. I work with all wild animals using no discipline and no reward - only affection, trust and respect. If the purpose in having interaction is to benefit the animal, it must be as completely positive experience for the animal; otherwise there is no purpose under this category of reasons for interaction. That means one must

start with the proper experience, knowledge and motivation. Without all of these qualities it is a recipe for failure, or worse, injury. One must know which individual would probably benefit. Since wild animals do all have unique emotional characteristics just like us, some individual wild animals can't be trusted by even the most experienced human and perhaps don't want human contact. Next, the human must know what activities and interaction will produce positive emotional benefits, and the human must be motivated only for the benefit of the animal involved. If one has any other purpose for the interaction (such as ego gratification, desire to dominate, or to show off to others) the animal will probably not respect or trust the human, and it will not be a positive activity for either party. In fact, someone with improper motivation will most likely end up seriously injured, and the animal will also suffer as a result. It must also be emphasized that positive interaction does not have to take place in unprotected contact with a wild animal; many of the benefits of emotional bonding and trust can be achieved from protected contact through a fence.

## **2. Health and Medication**

If a wild animal looks to an individual or individuals for security, trust and comfort, quite often minor medical procedures can be accomplished without stress and/or sedation. I have given tigers and other large cats shots for days, taken urine samples, removed objects jammed in their teeth, removed obstructions around the animals, and checked paws, etc. for potential problems. I have heard of others doing artificial insemination without sedation. We don't do any breeding, so that had not been relevant for our sanctuary. We have made a number of moves from habitat to habitat without stress, sedation, or obvious discomfort. I have even led cats from one habitat to another, although I don't advise this method unless the behaviorist is extremely knowledgeable, knows the cat to be moved very well, and the environment in the entire area can be completely controlled.

## **3. Safety Issues**

From a safety standpoint, there is great benefit to having someone present at a facility that has a positive relationship with each individual animal. My observation is that most escape plans with which I'm familiar, even at large institutions such as zoos, do not take sufficient notice of the benefit of calming an animal down and getting it more comfortable with its surroundings before attempting to either sedate the animal or confine it in some manner. Failure to do so frequently has resulted in injury to animals, humans or both. With few exceptions, the presence of someone with whom the animal feels comfortable and trusts can minimize potential for harm to either animals or humans. A caregiver that animals look to as a source of security and support can often lead escaped animals back to their enclosure since they are frightened once they escape and seek a source of comfort. Escape plans that don't take into account the fact that stress and agitation will cause aggressive/defensive reactions that are potentially harmful to all present are fundamentally flawed. Conditioning a dangerous animal to accept humans as caregivers, rather than a source of irritation, stress or agitation can be the difference between life and death. I know of at least two separate instances regarding big cats where the prior conditioning of different tigers resulted in no injury to keepers who came in contact with the cat through the keepers' mistakes. I was responsible for the conditioning of one of the tigers. A very experienced friend of mine conditioned the other tiger.

## **4. Public Education and Conservation**

This section will undoubtedly be controversial for my experience is that not one person working with wild animals will agree with everything I say here. Also, I very much doubt that anyone working with wild animals would agree with everything anyone else said on this subject. There is a bit more unanimity among animal rights advocates who don't work with wild animals as they tend to group all wild animals as a cohesive unit, and decide that what they think *is right* for all wild animals generally. On the other hand, I and many others who have close relationships with wild animals realize that they are as individual as are humans. For instance, the statement often heard that all wild animals would be better off in the wild than in the best conditions in captivity is too confining. Just as all humans don't live in the wilds of Montana—nor live in the confinement of an apartment in New York City—so, too, do wild animals differ in what makes them happy, based on their individual personalities.

It had been illustrated time and again that we humans only care about preserving those animal species with which we identify in a positive and caring manner. Examples such as dolphins, killer whales, pandas, koalas and wolves illustrate the value of human caring. And even some of those species are having difficulty surviving because of habitat destruction, poaching, commercial activities and conflict with agricultural and development interests.

While I consider myself an animal activist, I also have a pragmatic understanding that appropriate venues are necessary to enable the public to identify with individuals of a species—particularly carnivores and large wild animals such as bears—in order for them to take an interest in their treatment and survival. If we didn't become attached to "Flipper" many years ago, where would dolphins be today? And if we didn't become attached to "Shamu" and his many incarnations, what would the date of killer whales be?

Many wrongs have been committed in the attempt to use animals for entertainment, including past inappropriate activities such as: dressing primates in foolish human clothing and having them do undignified and demeaning activities; having exotic cats shows where the cats and the trainer have an adversarial relationship and the cat is expected to do "tricks" such as leaping through a hoop of fire, or balancing on a platform while the trainer brandishes a whip or other device; or elephant shows wherein the elephant is trained and controlled with a "bull hook" and required to perform unnatural tricks such as sitting on a pedestal or standing on one leg.

Add to those obvious infractions the following inappropriate and stressful activities such as: photo shoots with the public in close proximity or actually holding the animals; taking wild animals on television shows where they are ridiculed or used only as props for jokes; walking large carnivores on a leash in proximity to the public; and allowing the public to fondle and pet wild animals that are confined. There is plenty of ammunition for those animal rights activists who want to ban all venues using wild animals. They characterize all of these activities as exploitation and inappropriate use of a wild animal. Many of them are. These activities send the wrong message to the public and perpetuate the treatment of animals as objects to be utilized in any manner we choose for entertainment. The appropriate venues which do treat wild animals with respect and utilize natural behaviors are cast in the same light because the majority of users are the inappropriate ones. Therefore, the opportunity to educate the public about treating wild animals with the respect and dignity to which they are entitled, while getting the public to identify with them is being questioned, and we have "opportunities lost".

In the past, the zoological community has been among the perpetrators of the above-stated inappropriate activities. Some zoological community members are still perpetuating some of these abuses. The solution by a large number of zoological community members who realize the mistake has been to decree that they will no longer utilize wild animals in any venue involving human interaction, and therefore the animals will then be treated more as exhibits, not sentient beings. This choice would result in further distancing the public from identification with wild animals and vastly inhibit the ability to marshal sentiment for conservation and protection methods crucial to the survival of most of the larger species of wild animals.

I would submit that there are appropriate and proper venues that involve wild animals in a manner which is educational to the public, helps the public identify with a particular animal species, and is enjoyable— or at least not stressful — for the animals involved.

First, the organization developing the interaction must carefully select individuals within a species that are temperamentally suited to activities involving masses of people. Each animal is an individual, and some wild animals like solitude. Others appear to enjoy interaction in front of a crowd if they are treated with respect and concern for their welfare and comfort.

Next, any interactions should be designed to display the particular species in a venue that allows for it to use natural behaviors in a way the public can enjoy but is also pleasurable to the animal. For exotic cats this would involve a natural setting where the cat would chase lures, perhaps climb trees, and leap from object to object. Properly done with the right cats, this activity can be educational for the public and fun for the animals involved. Such interactions would educate the public about the cats' playful and sometimes affectionate nature, while at the same time demonstrating that any use of a wild animal should involve activities that both the animal and the public finds enjoyable. For primates, an appropriate activity could be having a grouping of ropes and swings in an area and having the trainers swinging and engaging in natural primate activities with the primates that would be fun for the primates as well as the public.

In my opinion, if wild animals are to be used in television shows, there should be conditions present that minimize stress to the animal while insuring its safety and security.



Only animals that have proven to be comfortable around people should be used, and the particular television show should show appropriate respect and consideration for the animals and not ridicule their behavior or nature. Also, there should always be a message about the need to respect and to preserve our natural world. Without such conditions there is no educational value in such interactions. Rather the message given is that it is okay to exploit and utilize animals in any manner we choose for entertainment. All public uses of wild animals should emphasize that it is wrong and improper to enjoy seeing an animal in stress or discomfort in any manner. Nor should an enlightened public get pleasure out of seeing an animal engage in unnatural behaviors.

In summation, well-planned and well-executed interaction between human and animal can be a constructive and positive activity for a variety of reasons, not the least of which is that future generations will hopefully grow to accept that all higher beings on this planet are entitled to some rights and concerns for their emotional/psychological needs. Half a century ago humans were guilty of placing other human beings in a subordinate classification and treating them as something to be separated and treated differently. Our state of enlightenment in the 21<sup>st</sup> century can hardly realize how that activity came to be and was accepted for so long. Perhaps better understanding and knowledge of wild animals – particularly wild predators – will allow humans to recognize that the animals' emotional makeup is more similar than different from our own, and the gap we now think exists between us is more a result of lack of verbal communication than it is substantial differences.

Only dedicated individuals embarking on a lifelong journey to learn about the animals on their terms and with respect for their instincts and needs can bring that recognition about. Necessarily, it will take interaction and understanding to achieve these results. Mistakes will be made. People will be injured. Has any achievement – including the struggle to establish equal treatment of all humans – taken place without those very same sacrifices?

*(Editor's note: The Viewpoint Column offers readers an opportunity to their express opinions on topics related to the profession of animal keeping. It is not a forum for expressing disagreements with employers about labor-related issues. Opinions expressed in this column do not necessarily reflect those of AAZK, Inc. or Animal Keepers' Forum. Publication of opinions in this column does not constitute endorsement by AAZK, Inc. or Animal Keepers' Forum. Materials submitted are published at the discretion of the editor.)*

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## 2003 AZA Regional Conferences

Eastern Regional - 26-29 March 2003. To be hosted by the Riverbanks Zoo & Garden, Columbia, SC.

Central Regional - 30 April - 3 May, 2003. To be hosted by the Milwaukee County Zoo, Milwaukee, WI.

Western Regional - 14-17 May 2003. To be hosted by the Calgary Zoo, Calgary, Alberta, Canada.



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*Institutions wishing to advertise employment opportunities are asked to send pertinent data by the 10th of each month to: Opportunity Knocks/AKF, 3601 SW 29th St., Suite 133, Topeka, KS 66614-2054. Please include closing date for positions available, and when setting these dates keep in mind that because of bulk-mail, most readers do not receive their AKF until the middle of the month or later. There is no charge for this service and fax or e-mail listings of positions which become available close to deadline are accepted. Our Fax is (785) 273-1980; e-mail: [akfeditor@zk.kscoxmail.com](mailto:akfeditor@zk.kscoxmail.com)< Listing may be sent as MS Word attachment. We are no longer located at the Topeka Zoo, so please note new address to avoid delays in processing.*

**Assistant Curator of Birds**...The International Crane Foundation, located in Baraboo, WI, has an immediate opening for an Assistant Curator of Birds. Applicants should have a BS (MS preferred) degree in biology, conservation or related field or science. Five (5) years of relevant experience in care and breeding of birds, including endangered species, with at least two (2) years in a supervisory position is preferred. Requires good understanding of bird behavior and biology, strong knowledge of varied husbandry techniques (artificial insemination, incubation, chick rearing), with basic knowledge of research and data analysis. Ability to communicate effectively in English, both written and oral, with the ability to present complex scientific information to a lay audience or to train foreign scientists, some with limited English, required. The Assistant Curator must carry out responsibilities with minimal supervision, work well as part of a team, handle multiple responsibilities and manage significant details. Job involves physical activity including restraining large, strong and aggressive birds and lifting up to 50 lbs. Must work outdoors in all types of weather. Computer skills, including word processing, use of spreadsheets and E-mail, are required. Knowledge of ARKS data management is desirable. Strong supervisory skills are required. This is a full-time position with a competitive salary and benefits. Offices and other buildings are smoke-free. To apply, submit a resumé, cover letter, names of at least three (3) references, and salary history to Susan Finn, International Crane Foundation, P. O. Box 447, Baraboo, WI 53913-0447 USA or email to [sfinn@savingcranes.org](mailto:sfinn@savingcranes.org), fax: 608-356-9465. AA/EOE.

**Keeper/Vet. Technician**...The Hattiesburg Zoo has an excellent career opportunity for a creative and team-oriented individual. This position, with growth potential for promotion, will be responsible for, but not limited to the following; daily husbandry, exhibit cleaning and maintenance, diet preparation and feeding, documentation, conditioning and training of collection, educational programs, veterinarian assistance. Job requires minimum high school graduate (college degree preferred), one (1) year paid experience at an AZA institution, experience with a diverse collection. This is a full-time position with state benefits, salary commensurate with experience and qualifications. For more information regarding this position please contact John Wright, General Curator, Hattiesburg Zoo, Hattiesburg, MS 39401, (601) 545-4576, email: [jwright@hattiesburgms.com](mailto:jwright@hattiesburgms.com).

**Zookeeper/Primates and Small Mammals**...The Toledo Zoo is seeking an individual with a minimum of one (1) year previous experience in the care of a diverse collection of apes, old world monkeys and small mammals. Responsibilities include all facets of care and observation of animals, cleaning/maintenance of exhibits, training, enrichment and record maintenance. Requires a degree in a related field, a valid driver's license and availability to work weekends and holidays. Full-time position with starting salary rate of \$11.75/hr and an excellent benefit package. EOE. Resumés will be accepted until the position is filled. Resumé may be submitted by mail or email to the following addresses: RE: Zookeeper, Human Resources, The Toledo Zoo, PO Box 140130, Toledo, OH 43614-0801; or [hr@toledozoo.org](mailto:hr@toledozoo.org)<

**Zoo Keeper/Bird Trainer**...the candidate should have a college degree in an animal-related field, and have paid experience in a zoo setting. The applicant should also be capable of training raptors and be able to do a presentation to a large audience. Salary from \$23,000-\$26,000, plus benefits. Send a resumé to: Vince Hall, Claws 'N' Paws Wild Animal Park, RR 1, Box 1932 Ledgedale Road, Lake Ariel, PA 18436.

## **Internship Opportunities - National Aquarium in Baltimore**

To apply for any of the following internship positions go online at [www.aqua.org/education/internships](http://www.aqua.org/education/internships) to obtain an application form. A complete application includes contact information, answers to brief statements listed, and a copy of college transcript. Complete applications should be sent to: National Aquarium at Baltimore-Internships, Pier 3/501 East Pratt St., Baltimore, MD 21202. Application Deadline: ongoing - 1 April 2003 for Summer and Fall 2003 terms; 1 November 2003 for January and Spring terms of 2004. For further information contact the National Aquarium in Baltimore's Internship coordinator at [intern@aqua.org](mailto:intern@aqua.org) or call (410) 576-3888.

### **Aquarist Intern**

The selected candidate will assist the Aquarium aquarist staff with daily care of the Aquarium's invertebrates and fish. *Essential Functions:* Assist with tank maintenance and cleaning; Prepare daily diets and perform daily feedings; Assist in the maintenance of back-up areas; Conduct precise record keeping; Perform special projects to be determined by the aquarist staff. *Requirements:* College juniors or seniors enrolled in an accredited college, pursuing a degree in Biology, Ecology, Environmental Science, or a related field. Must complete a minimum of 120 hours of work within the selected term, preferably during the week. Must be able to lift 50 lbs, climb up a 6' ladder, and be able to squeeze across a 15' long x 12" wide platform. Interns must receive college credit for their internship. Internships are unpaid.

### **Aviculture Intern**

The selected candidate will assist the Aquarium aviculture staff with daily husbandry activities in the South American Rainforest exhibit. *Essential Functions:* Assist with and perform diet preparation and distribution; Conduct animal observations; Assist in the cleaning of holding areas, kitchen, and food prep areas; Provide enrichment to the aviculture collection; Perform special projects at be determined by the aviculture staff. *Requirements:* Interest in working with birds. Enrolled in an accredited college, pursuing a degree in Biology, Zoology, Animal Behavior, Ecology, Environmental Science, or a related field. Must complete a minimum of 120 hours of work within the selected term. Interns must receive college credit for their internship. Internships are unpaid.

### **Herpetology Intern**

Duties: Tend the "Hidden Life" exhibits (large wall terrariums where small, neotropical lizards, frogs, snakes and invertebrates are on public display); Mist and clean the off-exhibit colony of small arboreal lizards; Mist, clean and otherwise help tend the large, off-exhibit collection of neotropical frogs; Prepare diets for and feed the on and off-exhibit iguanas and tortoises; Tend the locust (live food) colony, orb-weaving spiders and colonies of non-venomous exotic arthropods (wood and hissing roaches, millipedes and walking sticks); Assist in the maintenance of the live food cultures (fruit flies, springtails, crickets, rats, mice); Conduct and record animal observations; Perform special projects as determined by the herpetology staff. *Requirements:* Enrolled in an accredited college, pursuing a degree in Biology, Zoology, Animal Behavior, Ecology, Environmental Science or a related field. Must be comfortable working with frogs, lizards, rodents and terrestrial arthropods. Must complete a minimum of 120 hours of work within the selected term. Interns must receive college credit for their internship. Internships are unpaid.

*Horticulture Intern* The selected candidate will assist the Aquarium horticulture staff with daily activities. *Essential Functions:* Assist with care of plants in the Rain Forest exhibits; Conduct plant maintenance, fertilization, propagation, and transplantation; Assist in display development; Perform special projects at be determined by the horticulture staff. *Requirements:* Enrolled in an accredited college, pursuing a degree in Biology, Ecology, Environmental Science, or a related field. Must complete a minimum of 120 hours of work within the selected term. Interns must receive college credit for their internship. Internships are unpaid.

### **Marine Animal Rescue Program (MARP) Intern**

The selected candidate will aid in all aspects of marine animals rescue program (MARP) operations, which involves the rescue, rehabilitation, and release of stranded marine mammals and sea turtles and implementing outreach efforts of the Aquarium's Ocean Health Initiative. The selected candidate is also responsible for technical and clerical assistance for the Conservation Department staff as necessary.

*Essential Functions:* Animal Care – participating in rescue and release trips, daily feeding, medical treatments, facility maintenance including cleaning and water changes, behavioral observations, and record keeping; Outreach – learning to interpret the MARP artifacts and conservation messages and participation in seasonal outreach and public education programs at the Aquarium and off site; Other duties as assigned – field work, etc. *Requirements:* College junior or senior majoring in environmental science or related field with course work in biology and ecology. Summer and January terms require 40 hours per week of work for 4 weeks. Spring and fall terms require 8 hours per day, one day per week of work. Must complete a minimum of 120 hours of work within the selected term. Interns must receive college credit for their internship. Internships are unpaid.

#### Marine Mammal Trainer Intern

The selected candidate is responsible for providing support to the marine mammal training staff. This internship's primary purpose is to teach the intern training theory. ***There is limited hands-on animal contact during the internship.*** ***Essential Functions:*** Prepares daily animal diets and dispenses vitamins as instructed; Responsible for the cleanliness and safety of all animal back-up areas; Assists in training, husbandry, and medical sessions; Participates in pre-show and pre-session preparations; Periodically participates in sessions involving swimming during enrichment and play sessions – no animals involved; Other duties as assigned. ***Requirements:*** College junior or senior majoring in life science or related field. Must have a basic understanding of marine mammal natural history. Must have good swimming skills. Must work well as a team member. Summer and January terms require 40 hours per week of work for 4 weeks. Spring and fall terms require 8 hours per day, one day per week of work. Must complete a minimum of 120 hours of work within the selected term. Interns must receive college credit for their internship. Internships are unpaid.

#### Water Quality Lab Intern

The selected candidate will assist in the water quality testing of all fish and mammal systems throughout the aquarium. Duties include testing water for salinity, pH, ammonia, nitrite, alkalinity, and copper according to lab procedures, and recoding neat, accurate data. The selected candidate will work closely with the Lab Technicians and the Animal Husbandry staff. ***Requirements:*** College junior or senior with general biology and chemistry work. Strong math skills and computer proficiency preferred. Must be available to work mornings. Must complete a minimum of 120 hours of work within the selected term. Interns must receive college credit for their internship. Internships are unpaid.

**Aviculture Interns...** for the Hawaii Endangered Bird Conservation Program at the Keauhou Bird Conservation Center (KBCC) on the Big Island of Hawaii and the Maui Bird Conservation Center (MBCC) on the island of Maui. Daily tasks include husbandry duties such as: diet preparation, aviary and facility maintenance, behavioral observations of breeding birds, grounds keeping, predator control. Applicant must be able to live with several roommates in a remote area and should show enthusiasm for work with captive endangered Hawaiian birds. Applicant must have a valid driver's license and health insurance. Internships last for a 3-6 month period. Interns receive \$20/day stipend plus housing. For more information on internships at **KBCC**, please send a resumé, cover letter, and the names and contacts of three (3) references to: Tracey Goltz, P.O. Box 39, Volcano, HI 96785 or fax: 808-985-7034. **OR**, for more information on internships at **MBCC**, please send this information to: Mary Schwartz, 2375 Olinda Road, Makawao, HI 96768 or fax: 808-572-3574.

*Positions posted with AAZK, Inc. may also be found on  
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